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ABSTRACT

As follow-up to an in-depth study of the District of Columbia's early learning programs and their impact, this study provided data on the transition of previously studied children from primary education to upper elementary grades. Academic progress of the original group of pre-kindergarten and Head Start children was studied during years 5 and 6 in school (third and fourth grades) and children's development was re-examined during year 7 (fifth grade). The effects of type of preschool model were also examined. A matched group of classmates who had not attended pre-kindergarten or Head Start were studied concurrently. Results indicated that: (1) most children in both groups were making generally average progress, although there was an unusually high rate of grade retention and a disturbingly high level of maladaptive behavior; (2) attending Pre-K or Head Start programs had a positive effect on later school performance, but this was more significant for those children who had not been previously retained in grade; (3) by year 6 (fourth grade), children from the original group whose pre-K programs were determined to be academically oriented were earning noticeably lower grades and passing fewer fourth-grade reading and mathematics objectives than those from more social pre-K programs or those who did not attend preschool, and by fifth grade were developmentally behind peers and displayed notably higher levels of maladaptive behaviors than their peers in either group. The study's recommendations include re-establishing kindergarten as a developmentally appropriate learning experience, re-examining current policy regarding retention in the primary grades, providing intervention for factors placing children at risk, and formalizing transition policies to assist children and their families as they enter school. (HTH)

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EARLY LEARNING AND EARLY IDENTIFICATION FOLLOW-UP STUDY: TRANSITION FROM THE EARLY TO THE LATER CHILDHOOD GRADES

1990-93

District of Columbia Public Schools

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EXECUTIVE SUMMARY

Beginning with the 1986-87 school year, the District of Columbia Public Schools initiated a three year, in-depth study of its early learning programs in order to understand the impact of such programs on children's long-term school success. The high first grade retention rate in this school system prompted the initial study because children in Washington, D.C. are offered two years of public early educational experiences before first grade entry. The December 1990 report of the original three year study identified types of programs that best prepare children for formal learning experiences. That study also helped educators to better understand reasons for learning deficits in the primary grades so that preventative measures could be developed. Findings from the original in-depth evaluation of early learning programs have since been used within the school district to build programs that best meet the needs of children and their families in Washington, D.C. As a result of such reforms, early education in the District of Columbia Public Schools is rapidly becoming an exemplary model for the nation.

Follow-Up Study

It was recommended in the initial three year study of the District of Columbia Public School's early learning years program that children's progress be re-evaluated at crucial transition points as they move through the school

system so that long-term effectiveness of different models could be determined. Thus, as the 'Class of 2000' approached the transition from third to fourth grade, the Director of the Early Learning Years Branch determined the need to continue the study beyond its original three year scope and provided the support for additional data collection on previously studied children.

The 1990-93 Early Learning and Early Identification Follow-Up Study provides data on the transition of previously studied children from primary education to upper elementary grades. In this follow-up study, academic progress of the original group of pre-kindergarten and Head Start children ('Class of 2000') was studied during 'Years 5 and 6' in school, and children's development was re-examined during 'Year 7' in school. If no prior grade retentions had occurred, 'Year 5' would correspond to third grade, 'Year 6' to fourth grade, and 'Year 7' to fifth grade. A matched group of 'Class of 2000' classmates who had not attended pre-kindergarten or Head Start (initially identified in kindergarten) were studied concurrently. The academic progress of a second cohort of pre-kindergarten and Head Start children ('Class of 2001') was also studied during 'Year 5' of these children's school experience, with development being re-examined during 'Year 6' of their school experience.

This follow-up evaluation expanded upon specific concerns addressed in the original three year study, and provides useful information for policy makers. It is now

clear that reforms initiated in 1990 in the District's early learning programs will help large numbers of children as they enter and move through the Washington, D.C. public schools. In fact, **most children** in the two cohorts studied are **generally making average progress** as measured by school grades, standardized achievement tests, and developmental measures. The **only notable exceptions** to such indicators of progress are an **unusually high rate of grade retention** and a disturbingly **high rate of maladaptive behavior** (inattention, anxiety, mild depression, etc.). Because both of these concerns have important implications for the school and the community-at-large, further reforms are still needed. Fortunately, examination of longitudinal data collected since children were 4-years-old show us what does or does not work with these children, and makes identification of needed reforms easier. Implementation of needed changes is more difficult, but not impossible given the school district's rapid and productive response to earlier study recommendations.

Models of Early Childhood Education

Earlier efforts to shift the focus of pre-kindergarten away from teacher-directed academics to child-initiated, active learning are well worth it. The **negative impact** on achievement and social development **of overly academic early childhood programs** was clearly apparent by age nine in this sample of DCPS children. By fourth grade children who had attended academically-directed Pre-K programs were earning

noticeably lower grades and passing fewer fourth grade reading and mathematics objectives, despite adequate performance on third grade standardized achievement tests. By fourth and fifth grades, children from academic Pre-K programs were developmentally behind peers and displayed notably higher levels of maladaptive behavior.

More efforts to reform kindergarten are needed. The findings are clear. **Socioemotional kindergarten** experiences, in which children's developmental levels, physically, cognitively, socially and emotionally, are being addressed, have a **long-lasting, positive impact** on children's academic and developmental competence. This effect is most noticeable during children's first year in the upper elementary grades, although among boys who participated in Pre-K/Head Start, the socioemotional kindergarten experience was associated with greater school success and enhanced development throughout their school careers. There is no advantage in keeping kindergarten as a 'junior' version of first grade. There is, however, a real benefit from returning the kindergarten experience to the preparatory role it once held. **Socioemotional development is a legitimate goal of early learning experiences, and making kindergarten developmentally appropriate should be a central curricular and instructional priority.** The consequences of failing to do so are unacceptable, especially for boys in this urban school system.

Transition to Upper Elementary

Overly academic early learning experiences impact negatively on children's ability to successfully transition from the primary grades to upper elementary. Children whose first school experience is an academically-focused kindergarten have more difficulty making the transition. The long-term positive affects of a more active, child-initiated early learning experience show up between the fifth and sixth year of school for children who begin school at age four.

Children whose first school experience is an academically-directed pre-kindergarten show the greatest decline in school grades between first and fourth grade. Although less consistent, there is also some indication that children whose first school experience is an academically-focused kindergarten also make less progress by fourth grade than do children whose first school experience is more socioemotional in nature. Patterns of developmental change from pre-primary to primary and upper elementary grades are more difficult to identify, although children with overly academic preschool experiences had not advanced as rapidly in social development.

Thus, consistent with findings on the long-term effects of different models, children's academic and developmental progress through school is enhanced by more active, child-initiated early learning experiences. Their progress is slowed by the 'escalated curriculum' which introduces formal

learning experiences too early for most children's developmental status.

School Competence

Because intellectual and achievement gains associated with early intervention typically fade by third grade, researchers have focused on other indicators of success such as lower retention rates and reduced special education placement. Interestingly, among "on schedule" DCPS children who had not been previously retained, the effects of Pre-K/Head Start did not fade by third grade. With the exception of poorer performance by children who had attended academically-directed Pre-K, third and fourth grade children who had attended Pre-K/Head Start maintained their earlier advantage over classmates who had not attended Pre-K/Head Start. Unfortunately, this promising finding did not apply to children who had been retained prior to third grade. Whereas "on schedule" children are successful in making the transition from 'Year 5' to 'Year 6' of school, others appear to need additional help to avoid losing the earlier gains associated with Pre-K/Head Start attendance.

Special education placement increased after third grade, showing no difference in rate of placement between those who had or had not attended Pre-K/Head Start although prior to third grade more K-only children received special education services. However, in this school system it appears that grade retention is used to deal with early academic difficulties rather than special education

referral. By the end of 'Year 6' in school, approximately one-third of the children in this study had been retained at least once, and 5% had experienced multiple grade retentions. With grade retention a known predictor of high school drop out, it is vital to identify and aggressively remediate early predictors of grade retention.

Efforts to curtail early difficulties predictive of nonpromotion in the primary grades could translate into reductions in the DCPS dropout rate. For children who had attended Pre-K/Head Start, early parent involvement appeared to be a powerful 'inoculator' against retention prior to third grade. Low involvement during kindergarten and difficulty with language-related subjects in first grade were identified as early predictors of retention prior to third grade. Poor performance in language-related subjects during children's fifth year in school was predictive of retention following 'Year 5.' It is, therefore, imperative that retention policies be re-examined and **preventative actions be initiated as soon as potential problems are identified.** However, it is also important that such children not be labeled as dropout risks because of the negative consequences of self-fulfilling prophesies.

Thus, continuous progress/ungraded primary appears to be a viable alternative to retention. For K-only children, retention after third grade is more productive than retention prior to third grade. For Pre-K/Head Start children, retention at any time does not appear to be an effective strategy for remediating academic differences that

were evident before third grade. Furthermore, retention after fourth grade is inappropriate if the source of children's troublesome classroom behavior and early reading problems is an undetected learning disability.

Risk Factors

Various risk factors related to children's sex, poor attendance, family transiency, low parent involvement, language deficits, and early learning model were identified. An increased likelihood of special education placement was associated with low parent involvement, moving prior to third grade, and attending an academically-focused kindergarten. Pre-K/Head Start boys and K-only girls were the most likely to be retained before third grade. For Pre-K/Head Start children, frequent moves were also associated with a higher retention rate throughout their school careers.

Difficulty in making the transition from the primary grades to upper elementary was associated with overly academic early learning experiences, moving after first grade, and attendance problems during children's first year in school. It is possible that whatever factors affect children's initial transition to school reappear at the next crucial period of transition in their educational careers. Thus, children who change school after first grade and/or who have excessive absences during their first year of school will need more help adjusting to their new school experiences. The anticipated result of such early

intervention would be reduced transitional difficulties of children upon leaving the primary grades.

Some reduction in later maladaptive behavior could also be expected if receptive language deficits were identified and remediated earlier. Screening all kindergartners for receptive language delays and subsequent therapeutic intervention is an especially important preventative action.

Parent involvement has an important and enduring impact on children's progress in school. Involvement during Pre-K/ Head Start appears to have an enduring positive affect on children's behavior in the classroom. Parent involvement also affects children's grades and performance on standardized achievement tests, with involvement during children's second year in school being especially critical for later school success. Parent involvement was easier to predict for children who had attended Pre-K/Head Start, with Head Start parents the most likely to be involved early in their children's school careers. Involvement during kindergarten was the most critical predictor of future involvement, although academically-focused kindergarten programs were less likely to encourage parent involvement.

The impact of parent involvement on school competence, academic achievement, and children's development is especially noteworthy because none of the types of parent involvement examined in this study required large amounts of time, yet the results are remarkable and enduring. Failing to fulfill even the most minimal expression of parent involvement represents a clear danger to children's future

school success. Because involvement during kindergarten is especially critical, and the developmental appropriateness of kindergarten programs affects parent involvement, returning kindergarten to the preparatory role it once held is essential.

Maladaptive Behavior

In 1990 a strong warning about children's social development was made based upon research findings of deficits in social development and the anticipated impact of such deficits on later school performance. It was feared that early learning programs which chose to foster cognitive development over social, affective, and motor development would lead to later difficulties.

Unfortunately, just four years later this cautionary warning has become a reality with the majority of children showing intermediate or significant levels of maladaptive behavior. The most common problem reported by teachers was attention deficits/hyperactivity. Anxiety, possible depression, and conduct disorders were also frequently observed. Such behaviors are often concomitants of learning disabilities. Boys showed more severe levels of maladaptive behaviors than did girls. Children who had attended academically-directed Pre-K had the highest incidence of maladaptive behavior. Parent involvement in the earlier grades, especially kindergarten, was associated with lower maladaptiveness later in children's school careers. For children who entered school at age four, the incidence of

maladaptive behavior was notably higher among those who had been retained. Deficits associated with the most severe problems surfaced much earlier for Pre-K/Head Start children than for K-only children. These deficits were interfering with children's adaptive functioning.

The incidence of maladaptive behavior is alarming, although predictable given the previously overly-academic focus of these children's earliest learning experiences. As has been found by other researchers, early learning experiences that are highly didactic in nature are associated with later behavioral difficulties during adolescence, especially for boys. For DCPS children this detrimental impact has surfaced before adolescence, and is readily apparent in 9- and 10-year-old children. While some of these behaviors may reflect undetected learning disabilities, not all of these maladaptive behaviors can be attributed solely to school-related factors. In particular, the source of children's high anxiety and depressed behaviors may be community- or home-based.

Regardless of the source, however, **these undesirable behaviors are clearly interfering with children's adaptive functioning, both developmentally and academically.** Therefore, it is imperative that schools alter whatever contributing factors that are within their power to alter, and also address community-based factors which children bring with them to school. The unacceptably high level of maladaptive behavior is one of the most serious problems identified in this follow-up study. It is a problem which

must be dealt with swiftly and thoroughly, for failure to do so now only postpones the inevitable consequences at the next transitional point in children's school careers.

RECOMMENDATIONS

1. Re-establish kindergarten as a preparatory learning experience distinctly different from its current function as a 'junior' first grade by:
   a. emphasizing the importance of socioemotional development for later academic success and fostering educational practices that develop the entire child
   b. providing developmentally appropriate learning opportunities that consider children's individual needs and developmental status before formal learning activities are introduced
   c. requiring kindergarten teachers to be certified in early childhood education or to have comparable training in child development relevant to the needs of 5-year-old children

2. Re-examine current policy regarding retention in the primary grades. Expand continuous progress/ungraded primary programs as a viable alternative to retention. Initiate preventative actions as soon as potential problems appear that may be predictive of future retention, paying special attention to progress of

Pre-K/Head Start boys and K-only girls.

3. Provide swift intervention for factors which place children at-increased-risk for future academic, developmental, and/or behavioral deficits by:
   a. screening all kindergartners for receptive language deficits and remediating as needed
   b. intensifying remediation efforts for children who show signs of difficulty with language-related subjects in the first grade
   c. welcoming true parent involvement using strategies that have been effective with Head Start parents to foster meaningful parent involvement, with especially diligent intervention during the kindergarten year for parents who fail to become even minimally involved with children's education
   d. interceding (medically and/or through attendance counselors or school social workers) on behalf of children who have excessive absences during their first year in school (Pre-K/Head Start for those who enter at age 4, kindergarten for those who begin school at age 5)
   e. assisting children who change schools after first grade to better adjust to their new school experiences

4. Formalize transition policies to assist children and families as children first enter school and at each

successive transitional period in children's school careers (i.e., pre-primary to primary, primary to upper elementary/middle school, upper elementary/middle school to junior high, junior high to senior high school). Policies should include plans for:

a. assuring continuity of program
b. facilitating communication between sending and receiving facilities or programs
c. fostering cooperative planning between all staff who are responsible for children's progress at each successive level of schooling (e.g., the primary unit)
d. providing opportunities for children and families to visit and become familiar with the new setting, staff, and expectations before children are actually required to leave one milieu for another
e. monitoring children's successes and/or difficulties during the transition so that additional help can be received in order to sustain earlier progress

5. Institute comprehensive counseling/psychological services at the elementary school level to deal with the alarmingly high incidence of undesirable behaviors currently interfering with children's adaptive functioning. Because the elementary school counselor is pivotal in implementing this recommendation, schools must be staffed with professionals and/or community paraprofessionals who are proficient in a wide range of

services. These services should include, but are not limited to:

a. conducting a needs assessment at each elementary school to identify specific concerns or problems of children at that site so that intervention programs can be tailored to best meet the needs of children
b. screening for maladaptive behavior so that children who are classified as significantly maladapted can receive in-depth psychoeducational evaluation
c. updating administrators, faculty, and staff in effective behavioral strategies for use with inattentive, active, and possibly defiant children (i.e., consultation, conducting workshops, and providing individual guidance in how to implement specific strategies)
d. school-wide counseling at the classroom and small group level to help all children express and better cope with the basis for their anxiety and possible depression
e. training of peer counselors to provide further help and support for classmates
f. establishing community outreach programs to provide families with strategies and alternatives for handling children's maladaptive behaviors

6. Re-evaluate the progress of children in this study as they move through the school system so that long-term effectiveness of different early learning models can

be further examined and additional predictors of academic and developmental progress can be identified. Evaluations at the two remaining points of transition (junior and senior high school) would be helpful for identifying factors that contribute to children's overall school competence.

EARLY LEARNING AND EARLY IDENTIFICATION FOLLOW-UP STUDY: TRANSITION FROM THE EARLY TO THE LATER CHILDHOOD GRADES 1990-93

Beginning with the 1986-87 school year, the District of Columbia Public Schools (DCPS) initiated a three year, in-depth study of its early learning programs in order to understand the impact of such programs on children's long-term school success. The high first grade retention rate in this school system prompted the initial study because children in Washington, D.C. are offered two years of public early educational experiences before first grade entry. The original three year study identified types of programs that best prepare children for formal learning experiences. That study also helped educators to better understand reasons for learning deficits in the primary grades so that preventative measures could be developed. Findings from the original in-depth evaluation of early learning programs have since been used by the Board of Education, Administration and educators to build programs that best meet the needs of children and their families in Washington, D.C. As a result of such reforms, early education in the District of Columbia Public Schools is rapidly becoming an exemplary model for the nation.

Follow-Up Evaluation Design

It was recommended in the initial three year study of the District of Columbia Public School's Early Learning Years program that children's progress be re-evaluated at crucial transition points as they move through the school system so that long-term effectiveness of different models could be determined. Thus, as the 'Class of 2000' approached the transition from third to fourth grade, the Early Learning Years Branch director determined the need to continue the study beyond its original three year scope and provided the support for additional data collection on previously studied children.

The 1990-93 Early Learning and Early Identification Follow-Up Study provides data on the transition of previously studied children from primary education to upper elementary grades. In this follow-up study, academic progress of the original group of pre-kindergarten and Head Start children ('Class of 2000') was studied during 'Year 5' and 'Year 6' of these children's school experience. Children's adaptive development was also re-examined during 'Year 7' in school. If no prior grade retentions had occurred, 'Year 5' would correspond to third grade, 'Year 6' to fourth grade, and 'Year 7' to fifth grade. A matched group of 'Class of 2000' classmates who had not attended pre-kindergarten or Head Start (initially identified in kindergarten) were studied concurrently.

The academic progress of a second cohort of pre-kindergarten and Head Start children ('Class of 2001') was

also studied during 'Year 5' of these children's school experience. Adaptive development of this second group was re-examined during 'Year 6' of their school experience. Because insufficient numbers of matched 'Class of 2001' classmates had been previously identified, no corresponding follow-up data for a group of children who had not attended pre-kindergarten or Head Start were analyzed for this second cohort.

Evaluation Questions

This follow-up evaluation expanded upon specific concerns addressed in the original three year study, including the impact of pre-kindergarten and kindergarten experiences on children and schools that later serve graduates of the district's pre-primary programs. Of special concern in this follow-up study were the following areas:

- Effects of **DIFFERENT PROGRAM MODELS** and philosophies of early childhood education on children's performance and development
  - What approaches have the most positive impact on children's development and progress toward mastery of skills needed to advance to upper elementary?
  - Are the same pre-primary approaches effective for boys and girls?
- Effects of early experiences on **SCHOOL PERFORMANCE DURING TRANSITION** from primary to upper elementary
  - What does the pre-kindergarten or Head Start experience contribute to school performance?
  - How and when does parent involvement influence children's progress in school?
  - What impact does transiency and attendance have on children's scholastic achievement?
- **FACILITATING SCHOOL COMPETENCE**
  - Can predictors of grade retention be identified?
  - Does retention prior to third grade facilitate children's development and learning process?
  - Which, if any, pre-primary approaches are associated with a reduction in special education placements following kindergarten?
- **FACILITATING CHILDREN'S MENTAL HEALTH**
  - What is the incidence of maladaptive behavior within this population of school-aged children?
  - Is any identified pattern of maladaptation associated with other deficits in children's development? If so, which of these factors could be alleviated in a school setting?

Follow-Up Sample

Follow-up data were available for 461 children. Of these children, 81% (n = 372) had previously attended pre-kindergarten or Head Start in the District of Columbia Public Schools, and the remaining 89 children had first entered school as kindergartners. At the time of the follow-up, children were enrolled in 95 different elementary or middle schools in the district. Of these 461 children, 60% were originally from the 'Class of 2000,' and the remaining 40% were originally sampled from the 'Class of 2001.'

Three years of data from the 'Class on 2000' included the following: (a) 'Year 5' grades (n = 164 children attended Pre-K, n = 71 K-only children) and standardized achievement test scores (n = 132 children attended Pre-K, n = 50 K-only children), (b) 'Year 6' grades (n = 184 children attended Pre-K, n = 89 K-only children), and (c) 'Year 7' adaptive development scores (n = 146 children attended Pre-K, n= 66 K-only children).

Two years of data from the 'Class of 2001' included the following: (a) 'Year 5' grades (n = 177 children attended Pre-K) and standardized achievement test scores (n = 139 children attended Pre-K), and (b) 'Year 6' adaptive development scores (n = 149 children attended Pre-K).

Follow-Up Measurements

The DCPS Report of Pupil Progress for Elementary Grades 1A - 6B was used to monitor children's mastery of basic skills after 'Year 5' and 'Year 6' of school. The corresponding DCPS Competency Based Curriculum objectives checklists for reading and mathematics were also examined as a measure of school progress.

The Comprehensive Test of Basic Skills (CTBS) published by McGraw-Hill and administered district-wide during third grade served as a standardized assessment of school achievement. In addition to a Total Battery score, achievement is measured in the areas of Reading (word attack, vocabulary, comprehension), Language (spelling, language mechanics, language expression), Mathematics (math computation, math concepts and application), Science, and Social Studies.

The Vineland Adaptive Behavior Scales (1985-86 norms) published by American Guidance Services was selected as a standardized comparison of DCPS children's development with normative expectations for their age group. This scale yields an overall Adaptive Behavior Composite Score, as well as three domain scores measuring Communication (receptive, expressive, written), Daily Living Skills (personal,

domestic, community), and Socialization (interpersonal relation-ships, play and leisure time, coping skills). The Vineland had been previously administered during children's pre-kindergarten and kindergarten years. A fourth optional Vineland domain, Maladaptive Behavior, was included for the first time in the follow-up study.

Additional data gathered for the follow-up study included information about: (a) children's eligibility for a federally subsidized school lunch program based upon family economic factors, (b) any special education services received by children, (c) previous grade retentions, (d) transiency as measured by moves from one school to another during children's school career, (e) school attendance, and (f) extent of parent involvement in children's school experience. Parent involvement was measured through teacher reports of parent-teacher conferences, home visits, parent visits to the classroom, and parent assistance in class activities.

GENERAL FINDINGS ABOUT STUDENT PROGRESS AND DEVELOPMENT

As shown in Table 1, most children are making generally average progress as measured by school grades, standardized achievement tests, and developmental measures. The only notable exceptions to such indicators of progress are an unusually high rate of grade retention and a disturbingly high rate of maladaptive behavior. By 'Year 7' only 71% of the children were found to be in 5th grade, their correct grade level, and 3% were still in 3rd grade, indicating multiple retentions had occurred. With regards to behavior, approximately half of the children displayed notable signs of maladaptive behavior (e.g., inattention, anxiety, mild depression, etc.), with slightly less than one-third of these showing highly significant levels of disturbance.

Grade Retentions

On the average, 23% of the 'Class of 2000' has been retained prior to third grade, with a slightly higher retention rate of 28% found among children who had not attended pre-kindergarten or Head Start prior to kindergarten entry. Although the retention rate of 16% in the 'Class of 2001' was lower, this difference was offset by a larger percentage of children being placed in special education programs prior to the third grade (4% of 'Class of 2001' sample versus 1% of 'Class of 2000' sample). Furthermore, a large number of children were to be retained after 'Year 5,' and a surprising number of children were even being retained after 'Year 6' in school.

Academic Performance

'Year 5' grades indicated a 'solid C' average, with fewer than one-quarter of the children's grade point average in the D or F range. Achievement test score averages were typically above the 50th percentile, with only a few exceptions slightly below the 50th percentile observed in the 'Class of 2001' reading, language expression, and social studies scores. 'Year 6' grades followed a similar pattern.

Developmental Measures

All Vineland developmental score averages were found to be within the adequate range of functioning, although the lowest levels of development were found in communication skills. In the 'Class of 2000,' 32% demonstrated inadequate development of communication skills at the end of 'Year 7,' while 26% of the 'Class of 2001' showed inadequate communication skills development at the end of 'Year 6.'

Maladaptive behavior was exceptionally high in this group of children, reflecting high levels of inattentiveness and, to a lesser extent, anxiety and possible depression. By 'Year 6' in school, 49% of the children displayed a level of maladaptive behavior that warrants concern, with 29% of these children exhibiting highly disturbed behavior. The incidence of maladaptive behavior was similar in 'Year 7' children (53%), with a corresponding 28% displaying especially high rates of disturbed behavior.

PRE-PRIMARY PROGRAM EFFECTS ON LATER PERFORMANCE

Progress during children's fifth, sixth and seventh years of schooling was examined for the effects of: (a) pre-kindergarten or Head Start attendance prior to entering kindergarten, (b) pre-kindergarten or Head Start model, and (c) kindergarten model. Three pre-kindergarten and two kindergarten models had been previously identified using cluster analysis (see DCPS' 1990 Early Learning and Early Identification Study).

The pre-kindergarten models were: (a) Model CI child-initiated classrooms teachers were child development oriented and sought to facilitate learning by allowing children to direct the focus of their learning; (b) Model AD academically-directed classrooms where teachers preferred more direct instruction and teacher-directed learning experiences for preschoolers; and (c) Model M middle-of-the-road classrooms with teachers whose beliefs and practices fell in-between the other two opposing models.

The kindergarten models were: (a) Model ModAcK moderately academic kindergartens where teachers believed

that academic preparation was a more important goal of kindergarten than socioemotional development (in which children's developmental levels, physically, cognitively, socially and emotionally, are being addressed), and (b) Model ModAcK/SE kindergartens that were also moderately academic in their approach, but whose teachers valued socioemotional development as a goal of kindergarten.

Impact of Pre-K or Head Start Attendance on Performance

'Year 5' Grades. As shown in Table 2, the 'Year 5' grade point average (GPA) of children who had attended pre-kindergarten or Head Start was slightly higher (1%) than the GPA of K-only children. The Pre-K/Head Start children also had higher grades in math, reading, language, music, and citizenship. However, with the exception of lower citizenship grades earned by K-only girls ($p < .01$), none of the differences reported in Table 2 were statistically significant. This finding is interesting because K-only children were more likely to live in two-parent families of a higher socioeconomic status than classmates who had attended Pre-K or Head Start. It appears that attending Pre-K/Head Start had indeed given 'at-risk' children early learning experiences they may have otherwise missed, and by 'Year 5' in school they had equalled less disadvantaged students.

This trend was even more noticeable in 'Year 5' grades of children who were "on schedule," that is children who had not been retained and were in third grade as expected. In this case, the third grade GPA of Pre-K/Head Start children was 7% higher than that of K-only children and they earned higher grades in math (9%), reading (2%), language (4%), spelling (11%), handwriting (18%), social studies (2%), art (8%), health/PE (14%), and citizenship (17% higher). In science and music, the two groups received equal grades.

'Year 6' Grades. As shown in Table 3, the Pre-K/Head Start children had dropped from the previous year's performance and were now surpassed by K-only children as indicated by a 5% lower GPA and lower grades in math, reading, language, art, health/PE, and citizenship. Although none of these differences were statistically significant, they do reflect the possibility that at-risk children were having some difficulty in making the transition from primary to upper elementary grades.

"On schedule" children were not experiencing transition difficulties. Although most grades for the 'Class of 2000' dropped from third to fourth grade, Pre-K/Head Start children maintained a statistically significant advantage over K-only children. The fourth grade GPA of Pre-K/ Head Start children remained 7% higher than that of K-only

children and they earned higher grades in math (9%), reading (8%), language (9%), spelling (23%), handwriting (16%), social studies (17%), science (13%), music (6%), and citizenship (13% higher). Grades of fourth grade Pre-K/Head Start children were slightly lower than K-only children in the remaining subjects of art (1% lower) and health/PE (4% lower).

'Year 5' Achievement Test Scores. Third grade CTBS scores for "on schedule" children are shown in Table 4 and indicate that the average Total Battery Achievement score of Pre-K/Head Start children was 7% higher than that of K-only children. Although none of the differences reported in Table 4 were statistically significant, Pre-K/Head Start children scored higher in 10 of the 14 areas measured (including 8% higher in total reading and 7% higher in total language). Third grade Pre-K/Head Start children equalled K-only third graders in two areas (total math and social studies), although they scored 4% higher than K-only children in math computation. Third grade Pre-K/Head Start children were lower than K-only children in only one overall area (7% lower science scores) and one subscale (4% lower in math concepts and application).

'Year 7' Developmental Scores. Although none of the differences reported in Table 5 are statistically significant, "on schedule" children show a different pattern of development. Examination of Vineland developmental scores for all children shows K-only children to be slightly ahead of Pre-K/Head Start children, especially in development of Communication skills (K-only 6% higher). However, this pattern reverses when only fifth grade children (appropriate grade for 'Year 7') are assessed. Among "on schedule" children, Pre-K/Head Start children are 6% higher than K-only children in overall adaptive development . They are also 5% higher in development of Communication skills, 4% higher in Daily Living skills, and 6% higher in development of Socialization skills.

Overall, the incidence of Maladaptive Behavior is 16% higher in K-only children. Among "on schedule" children, the average incidence of Maladaptive Behavior is 6% higher for K-only children compared to fifth graders who had attended Pre-K/Head Start at age four.

Summary: Effect of Pre-K/Head Start Attendance

Attending Pre-K/Head Start had a positive effect on later school performance, especially among "on schedule" children who had not been previously retained in grade. By third grade, "on schedule" children who attended Pre-K/Head Start at age four earned higher grades in 9 of 11 subjects and scored higher in 10 of 14 areas measured by the CTBS

compared to K-only third graders. Furthermore, "on schedule" fourth graders were not experiencing transition difficulties in the move from primary to upper elementary, and maintained their grade advantage over K-only fourth graders. By fifth grade the "on schedule" children who had attended Pre-K/Head Start were developmentally slightly ahead of K-only classmates and displayed a lower incidence of maladaptive behaviors.

However, an examination of all children ("on schedule" and those previously retained) somewhat dilutes the impact of Pre-K/Head Start. Although the Pre-K/Head Start children were "holding their own" during 'Year 5' of school compared to the more economically advantaged K-only children in this sample, they fell behind during 'Year 6.' Whereas "on schedule" children are successful in making the transition from 'Year 5' to 'Year 6' of school, others appear to need additional help to avoid loosing the earlier gains associated with Pre-K/Head Start attendance.

Type of Pre-Kindergarten/Head Start Attended

'Year 5' Grades. Grades in a combined sample (n = 333) of the 'Classes of 2000 and 2001' were examined for any continuing influence of preschool model on current school performance. With the exception of lower music grades received by Model CI children ($p < .01$), no statistically significant differences attributable to Pre-K/Head Start model were found in 'Year 5' grades. The overall GPA of children in different models was within 1/10th of a grade point of each other. No systematic patterns were found that would indicate an interaction between preschool model and children's sex. However, 'Year 5' citizenship grades were highest among Model CI girls and Model M boys ($p < .05$).

Grades from a combined sample of "on schedule" third graders (n = 234) were also examined. In general, these grades were higher in all areas compared to the 'Year 5' sample which included children who had been previously retained. However, the findings were similar. With the exception of lower music grades received by Model CI children ($p = .06$) and lower math grades received by Model AD children ($p = .08$), no statistically significant differences attributable to pre-kindergarten model were found in children's third grade performance. The overall GPA of "on schedule" children in different models was also within 1/10th of a grade point of each other. No systematic patterns were found that would indicate an interaction between preschool model and children's sex. However, citizenship grades of "on schedule" third graders were also highest among Model CI girls and Model M boys ($p < .01$).

'Year 6' Grades. For children who had attended pre-kindergarten or Head Start, the sixth year of school should typically signal entry into an upper elementary curriculum. Therefore, it was especially interesting to now find differences in 'Year 6' school performance that were attributable to different types of pre-kindergarten and Head Start experiences. Differences were noted in both the "on schedule" sample of fourth graders and the 'Year 6' sample which also included children who had been previously retained.

This finding suggests an age-related effect of pre-school's influence on later school performance that was not evident at age 8 but rather appeared around age 9. Ironically other researchers have typically found a diminishing effect of early intervention during this same transitional period from third to fourth grade. However, this fading phenomena may manifest itself when research comparisons focus only on differences between children who had or had not received early intervention without examining possible effects of different types of early intervention. This current follow-up study may have concurred with previous findings had contrasts only been made between children with or without Pre-K/Head Start experiences. Fortunately, this present research on DCPS children was designed to also explore the effects of various preschool models on later performance. It was not automatically assumed that all early interventions should be grouped together when considering long-term effects of preschool.

When 'Year 6' grades of all children in the 'Class of 2000' sample were examined, the GPA of Model AD children was found to be significantly lower ($p < .05$), falling 13% below grades earned by Model CI children. As shown in Table 6, this pattern of lower grades was found in all but handwriting skills. In most subject areas, Model CI children earned the highest 'Year 6' grades. Statistical trends of lower Model AD 'Year 6' grades were also found for math ($p = .08$, 19% lower than CI), social studies ($p = .10$, 14% lower than CI and 16% lower than Model M), art ($p = .11$, 11% lower than CI), and health/PE ($p < .05$, 21% lower than CI).

Grades from "on schedule" fourth graders were also examined (see Table 6). These grades were higher in all areas compared to the 'Year 6' sample which included children who had been previously retained. Again, the GPA of Model AD children was significantly lower ($p < .05$, 12% lower than CI and 14% lower than Model M), with these children also receiving the lowest grades in all subject areas except music. Statistical trends of lower Model AD fourth grade school performance were also found for math ($p < .05$), language ($p = .12$), spelling ($p = .07$), social studies ($p < .01$), science ($p = .08$), and health/PE ($p =$

.13). In six subject areas Model M children earned the highest grades, while Model CI children were highest in three subjects and comparable to Model M children in reading and spelling.

Third Grade Achievement Test Scores. CTBS scores from a combined sample of "on schedule" third graders (n = 244) are reported in Table 7. Total battery standardized scores and all measures of reading achievement showed no effect of preschool model on 'Year 5' performance. However, Model CI children appeared to have some difficulty with the language skills being assessed on the CTBS. These children scored significantly lower on total language ($p < .05$), as well as language mechanics ($p < .05$) and language expression ($p = .07$). Model M children were doing notably well in math ($p < .01$, including math computation ($p = .11$) and math concepts and application ($p < .01$), science ($p < .01$), and social studies ($p < .01$).

Competency Based Curriculum Objectives. Although third graders who had attended a Model AD preschool were similar to other children on standardized measures of reading, they tended to receive lower reading grades in both third and fourth grade. This trend was especially noticeable among "on schedule" children. To further identify specific areas of difficulty, mastery of DCPS competency based curriculum objectives for reading and mathematics was examined for each preschool model.

3B Reading Objectives. In a combined sample of "on schedule" children from the 'Classes of 2000 and 2001,' Model AD children demonstrated lower rates of mastery. Their average pass rate was 73%, compared to the 80% Model CI and 83% Model M pass rates on 3B reading objectives.

Of the 11 objectives, the Model AD pass rate was significantly lower than other children for four 3B reading objectives: (a) *WP/C-11 Consonant Sound Symbol Relationship (82% pass, $p = .11$), (b) *WP/SA-15 Apply VCV Rule (76% pass, $p = .08$), (c) C/MCP-4 Describe Mood (62% pass, $p < .05$), and (d) SS/O-2 Construct One-Point Outline (52% pass, $p < .01$).

4B Reading Objectives. In a sample of "on schedule" children from the 'Class of 2000,' Model AD children demonstrated lower rates of mastery. Their average pass rate was 69%, compared to the 76% Model CI and 81% Model M pass rates on 4B reading objectives.

Of the 16 objectives, the Model AD pass rate was significantly lower than other children for three 4B reading objectives: (a) WP/VOW-18 Identify Phonetically Irregular Words (89% pass, $p = .07$), (b) WP/V-10 Distinguish

Connotative and Denotative Meanings (44% pass, $p < .01$), and (c) C/MI-6 Construct Main Idea/Outline (71% pass, $p < .01$).

3B Mathematics Objectives. The combined sample of "on schedule" children found similar pass rates on 3B math objectives, with Model CI passing 83% of the 29 objectives, Model M 88%, and Model AD 84%. Only objective WM-12 (multiply a four-digit multiple of one thousand by a one-digit number) indicated any group differences, with Model CI's pass rate of 90% being lower than that of other children ($p < .01$).

4B Mathematics Objectives. In a sample of "on schedule" children from the 'Class of 2000,' Model AD children demonstrated lower rates of mastery. Their average pass rate was 79%, compared to the 86% Model CI and 88% Model M pass rates on 4B mathematics objectives.

Of the 33 objectives, the Model AD pass rate was significantly lower than other children for 7 of the 4B mathematics objectives: (a) Gr-7 Given a grid, plot the point for a specified ordered pair (90% pass, $p = .12$), (b) CFA-4 Add a whole number and a mixed number (86% pass, $p < .05$), (c) CFS-2 Subtract a whole number from a mixed number (83% pass, $p < .01$), (d) CFA-5 Add a mixed number and a common fraction (86% pass, $p < .01$), (e) *CFA-6 Add two mixed numbers that contain like fractions less than one (81% pass, $p < .01$), (f) MCLn-6 Convert a measurement given in a whole number of feet to inches (56% pass, $p = .12$), and (g) *MCLn-8 Measure and record the length of an object using a ruler with 1/4 inch markings; with 1/8th inch markings (60% pass, $p < .05$).

On two of the 4B mathematics objectives, Model CI children had lower pass rates than other children: (a) G-15 Classify simple closed curves that are polygons--and the regions that are associated with them--according to the number of sides (64% pass, $p < .01$), and (b) MCA-2 Given foot-square models, measure the area of various regions and record the measurement using the abbreviation "sq. ft." (65% pass, $p = .12$).

Developmental Scores. Vineland Adaptive Behavior Scale scores from a combined sample of the 'Classes of 2000 and 2001' ($n = 294$) are shown in Table 8. In all domains measured, Model AD children were found to be lowest in development and Model M children showed the highest levels of development. These differences were statistically significant for Composite Adaptive Behavior ($p < .01$) and Social development ($p < .001$). Model AD children displayed higher levels of Maladaptive Behavior ($p = .12$) than either Model CI or Model M children.

'Class of 2000'. By 'Year 7' of their schooling experience, Model M and Model AD children showed 30% more maladaptive behaviors than did Model CI children. Model M children also showed significantly lower Personal ($p < .05$) and Domestic ($p < .01$) Daily Living skills than other children.

'Class of 2001'. By 'Year 6' of their schooling experience, Model AD children showed 44% more maladaptive behaviors than Model M children and 27% more than Model CI. While more Model M children than expected showed 'moderately high' adaptive levels of Coping skills ($p < .01$), more Model AD children than expected showed 'moderately low' adaptive levels of Domestic Daily Living Skills ($p = .13$).

Summary: Effect of Pre-K/Head Start Model

Although preschool model had no effect on 'Year 5' grades, by 'Year 6' children who had attended academically directed Pre-K programs were earning noticeably lower grades and passing fewer fourth grade reading and mathematics objectives, despite adequate performance on third grade standardized achievement tests. By fourth and fifth grades, children from academic Pre-K programs were developmentally behind peers and displayed notably higher levels of maladaptive behavior. The negative impact on achievement and social development of overly academic early childhood programs (found by other researchers to first appear during adolescence) was clearly apparent by age nine in this sample of DCPS children.

Type of Kindergarten Attended

'Year 5' Grades: Children who attended Pre-K/Head Start prior to Kindergarten entry. Grades in a combined sample ($n = 202$) of the 'Classes of 2000 and 2001' were examined for any continuing influence of kindergarten model on current school performance of children who had also attended Pre-K/Head Start. No statistically significant differences attributable to kindergarten model alone were found ('Year 5' GPA ModAcK = 2.52, ModAcK/SE = 2.48). However, as shown in Table 9, there were notable interactions between kindergarten model and children's sex. A consistent pattern emerged in which boys displayed greater academic competence in 'Year 5' if their kindergarten teachers had encouraged socioemotional development. Curiously, the reverse pattern was found for girls. 'Year 5' grades were higher in girls who had attended kindergartens that focused on academic preparation. These interactions were statistically significant for GPA ($p = .06$), reading ($p < .05$), language ($p = .11$), spelling ($p < .05$), and citizenship ($p < .05$).

Findings were similar in a combined sample of "on schedule" third graders (n = 135). Model ModAcK third graders had an average GPA of 2.77, while ModAcK/SE children's GPA was 2.76. The same pattern of interaction between kindergarten model and children's sex was found for overall GPA, reading, spelling, social studies, science, art, and citizenship grades. However, in this group of children, a statistical trend (p = .13) was found only in citizenship grades.

'Year 5' Grades: K-only children. Grades of 65 'Class of 2000' children who entered school for the first time as kindergartners were examined. As shown in Table 10, K-only children who attended ModAcK programs had higher 'Year 5' grades than ModAcK/SE children in all subject areas. These differences were statistically significant for art ($p < .05$) and music ($p < .05$), with statistical trends also found for handwriting (p = .13), science (p = .13), and citizenship (p = .07). Although the overall better performance of ModAcK K-only children was different from findings for children who had attended Pre-K/Head Start, 'Year 5' grades of K-only children showed a similar pattern of interaction between kindergarten model and children's sex. Like their Pre-K/Head Start counterparts, boys displayed greater academic competence in 'Year 5' if their kindergarten teachers had encouraged socioemotional development. This pattern was found in overall GPA (p = .12), reading (p = .15), language ($p < .05$), spelling (p = .08), social studies (p = .10), and science ($p < .05$).

Findings were similar in a sample of "on schedule" K-only third graders (n = 40). Model ModAcK third graders had an average GPA of 2.93, while ModAcK/SE children's GPA was 2.66. K-only third graders from ModAcK programs had higher grades in all subject areas. However, these differences showed statistical trends for social studies (p = .06) and music (p = .14) only. The pattern of interaction between kindergarten model and children's sex was less noticeable in this group of children. Although interactions were not statistically significant for "on schedule" K-only third graders, the pattern once again indicated that third grade boys displayed greater competence in reading, language and citizenship if their kindergarten teachers had encouraged socioemotional development.

'Year 6' Grades: Children who attended Pre-K/Head Start prior to Kindergarten entry. Grades for the 'Class of 2000' (n = 155) were examined for any continuing influence of kindergarten model on current school performance of children who had also attended Pre-K/Head Start. Although overall GPA and 'Year 6' grades in 9 of 11 subject areas reported in Table 11 were higher for ModAcK/SE children, only health/PE grades were statistically significant ($p < .01$). The pattern in which boys displayed greater academic competence in 'Year 6' if their kindergarten teachers had encouraged

socioemotional development was found in overall GPA and 6 of 11 subject areas. Again, the reverse pattern was found for girls. 'Year 6' grades were higher in girls who had attended kindergartens that focused on academic preparation. These interactions were statistically significant for spelling ($p < .05$) and citizenship grades ($p = .08$).

"On schedule" fourth graders ($n = 97$) varied somewhat from the overall 'Year 6' findings. Compared to ModAcK fourth graders, ModAcK/SE fourth graders had a higher GPA (2.85 vs 2.74), higher grades in 5 of 11 subject areas, and equal performance in 3 of 11 areas. These differences were significantly higher for science ($p = .06$) and health/PE ($p < .01$). However, ModAcK/SE fourth graders also received significantly lower citizenship grades ($p = .07$). The pattern of interaction between kindergarten model and children's sex was not consistently found for "on schedule" fourth graders, although it was evident for overall GPA, reading, language, and spelling grades ($p < .05$). Interestingly, "on schedule" fourth grade girls seemed to also be benefiting from a kindergarten experience that fostered socioemotional development. In particular, their math, science, and health/PE grades were higher than those of girls who attended kindergartens that focused on academic preparation.

'Year 6' Grades: K-only children. Grades of 85 'Class of 2000' children who entered school for the first time as kindergartners were examined. As shown in Table 12, K-only children who attended ModAcK programs had higher 'Year 6' grades than ModAcK/SE children in 7 of 11 subject areas, but were equal in overall GPA. These differences were statistically significant for citizenship grades only ($p < .05$). These findings differed from those of children who had attended Pre-K/Head Start. Furthermore, with the exception of GPA, science, and art, 'Year 6' grades of K-only children did not show a similar pattern of interaction between kindergarten model and children's sex.

"On schedule" K-only fourth graders ($n = 57$) showed different results. As shown in Table 12, Model ModAcK/SE fourth graders had an overall higher GPA than ModAcK children, and earned higher grades in all subject areas except citizenship. These differences showed statistical trends for GPA ($p = .14$), science ($p = .09$) and art ($p < .05$). The pattern of interaction between kindergarten model and children's sex was not apparent in this group of children because both boys and girls typically did better in fourth grade if their kindergarten teacher had encouraged socioemotional development. Of special interest is the finding that the benefits of ModAcK/SE programs for K-only children did not appear until fourth grade. While children were still in the primary grades the academic preparation emphasized in ModAcK kindergartens had helped K-only children. However, when "on schedule" children were faced

with the increased demands of upper elementary, the earlier socioemotional kindergarten experience provided the most help. Also, like their Pre-K/Head Start classmates, fourth graders whose kindergarten teachers encouraged socioemotional development received lower citizenship grades during the first year of upper elementary. Perhaps these children were attempting to make their new educational environment more child-initiated than was tolerated by their fourth grade teachers.

Third Grade Achievement Test Scores. CTBS scores (reported by kindergarten model) are listed in Table 7 for a combined sample of "on schedule" third graders who had attended preschool prior to entering kindergarten (n = 147). On total battery standardized scores and all other measures of achievement children who attended socioemotional kindergartens outscored peers whose kindergarten experience had emphasized academic preparation. Statistical trends were found for reading word attack skills (p = .09), language mechanics (p = .07), and science (p = .10). Third grade social studies CTBS scores of Model ModAcK/SE children were also significantly higher (p < .05) than those of ModAcK children.

Among "on schedule" K-only children from the 'Class of 2000' (n = 45), no statistically significant differences attributable to kindergarten model were found for any of the areas measured by the third grade CTBS. The average total battery score (in standard score units, with M = 50 and SD = 10) for ModAcK/SE and ModAcK children was 59.17 and 61.17, respectively.

Competency Based Curriculum Objectives. Mastery of DCPS competency based curriculum objectives for reading and mathematics was examined for each kindergarten model.

3B Reading Objectives. In a combined sample of "on schedule" children from the 'Classes of 2000 and 2001' who had attended preschool prior to entering kindergarten (n = 121), both kindergarten models produced similar pass rates. On the average, Model ModAcK/SE children passed 81% of the objectives and Model ModAcK children passed 83% of the 3B reading objectives. However, of the 11 objectives, fewer Model ModAcK/SE than expected passed reading objective *WP/C-11 Consonant Sound Symbol Relationship (82% pass, p < .05), and *WP/SA-15 Apply VCV Rule (76% pass, p < .05).

Among "on schedule" K-only children from the 'Class of 2000' (n = 45), Model ModAcK/SE demonstrated lower rates of mastery. Their average pass rate was 75%, compared to the 85% Model ModAcK pass rate on 3B reading objectives. Of the 11 objectives, fewer ModAcK/SE than expected passed reading objective *WP/C-11 Consonant Sound Symbol Relationship (85%

pass, $p < .05$), and SS/O-2 Construct One-Point Outline (54% pass, $p = .07$).

4B Reading Objectives. In a sample of "on schedule" children from the 'Class of 2000' who had attended preschool prior to entering kindergarten ($n = 80$), pass rates were similar for both kindergarten models (76% for ModAcK/SE and 75% for ModAcK). No significant differences on pass rate for any of the 16 objectives were found.

Among "on schedule" K-only children from the 'Class of 2000' ($n = 47$) Models ModAcK/SE and ModAcK demonstrated similar rates of mastery. Their average pass rates respectively were 82% and 81%. However, of the 16 objectives, fewer ModAcK than expected passed reading objective *WP/VOW-13 Apply VC, CVC, CVCE, CV, CVVC Principle (91% pass, $p = .12$), and C/FL-7 Describe Figurative Expressions (68% pass, $p = .06$).

3B Mathematics Objectives. The combined sample of "on schedule" children who had attended preschool prior to entering kindergarten found similar pass rates on 3B mathematics objectives for the two kindergarten models. Model ModAcK/SE and ModAcK children passed, respectively, an average 86% and 87% of the 29 objectives. No significant differences between models in pass rate for any of the 29 objectives were found.

Among "on schedule" K-only children from the 'Class of 2000' ($n = 46$), Models ModAcK/SE and ModAcK demonstrated similar rates of mastery. Their average pass rates respectively were 89% and 86%. However, of the 29 objectives, fewer ModAcK than expected passed the following five mathematics objectives: (a) MT-3 Given a Fahrenheit scale thermometer, identify the freezing point and the boiling point of water; read and record temperature (73% pass, $p = .11$), (b) MMA-1 Given centimeter-square models, measure the area of various rectangular surfaces, record the measurement (87% pass, $p = .09$), (c) MCA-1 Given inch-square models, measure the area of various rectangular surfaces; record the measurement using the abbreviation "sq. in." (62% pass, $p < .05$), (d) MMW-3 Convert a measurement given in kilograms to grams; convert a measurement given in grams to kilograms (68% pass, $p = .08$), and (e) RN-11 Given appropriate models, compare two specified fractions: greater than, less than; equal to (83% pass, $p = .09$). On one objective fewer ModAcK/SE passed than expected (NW-27 Name the value of a specified digit in a four-digit number; 89% pass, $p = .10$).

4B Mathematics Objectives. Similar pass rates on 4B mathematics objectives were found for the two kindergarten models in a sample of "on schedule" children from the 'Class of 2000' who had attended preschool prior to

entering kindergarten (n = 79). Model ModAcK/SE children passed an average of 85% of the objectives, and ModAcK passed 84%.

Of the 33 objectives, ModAcK had a lower pass rate than expected for five of the objectives while ModAcK/SE was lower than expected on three. Model ModAcK children were less likely to have mastered the following items: (a) *Gr-6 Construct , read, and interpret a bar graph (94% pass, p = .12), (b) WM-16 Multiply a four-digit number by a one-digit number (79% pass, p = .11), (c) CFA-5 Add a mixed number and a common fraction (92% pass, p = .06), (d) CFS-3 Subtract a common fraction from a mixed number with no regrouping (89% pass, p < .05), and (e) *MCLn-8 Measure and record the length of an object using a ruler with 1/4 inch markings; with 1/8th inch markings (69% pass, p < .05). Model ModAcK/SE children were less likely to master: (a) MCW-3 Convert a measurement given in pounds, to ounces. Convert a measurement given in ounces, to pounds and ounces or to a whole number of pounds (70% pass, p = .10), (b) MCA-2 Given foot-square models, measure the area of various regions and record the measurement using the abbreviation "sq. ft." (63% pass, p = .06), and (c) RN-17 Given a region and/or line segment separated into one hundred equivalent parts, read orally and write the common fraction associated with one part; with a specified combination of parts (76% pass, p =.10).

Among "on schedule" K-only children from the 'Class of 2000' (n = 84), Model ModAcK/SE children demonstrated lower rates of mastery. Their average pass rate was 84%, compared to the 92% Model ModAcK pass rate. These differences were statistically significant for 6 of the 33 objectives, with fewer ModAcK/SE than expected passing the following mathematics objectives: (a) WM-16 Multiply a four-digit number by a one-digit number (77% pass, p < .05), (b) CFA-4 Add a whole number and a mixed number (77% pass, p < .05), (c) CFS-3 Subtract a common fraction from a mixed number with no regrouping (92% pass, p = .11), (d) RN-17 Given a region and/or line segment separated into one hundred equivalent parts, read orally and write the common fraction associated with one part; with a specified combination of parts (78% pass, p < .05), (e) DA-3 Add three or more decimals in tenths and hundredths-money expressions (54% pass, p < .05), and (f) *MCLn-8 Measure and record the length of an object using a ruler with 1/4 inch markings; with 1/8 inch markings (33% pass, p = .08).

Developmental Scores. Vineland Adaptive Behavior Scale scores from a combined sample of children from the 'Classes of 2000 and 2001' who had attended preschool prior to entering kindergarten (n = 184) are shown in Table 8. In all domains measured, Model ModAcK/SE children showed the highest levels of development. These differences showed a

statistical trend towards significance for Composite Adaptive Behavior (p = .10), Communication (p = .13), and Social development (p = .11). The small difference between models in Maladaptive Behavior scores was not significant.

K-only Children. Among K-only children from the 'Class of 2000' (n = 57), the pattern was reversed and Model ModAcK children showed higher levels of development at 'Year 7' in school. While these differences were not statistically significant, there was an apparent interaction between kindergarten model and children's sex. This interaction was found for Composite Adaptive Behavior (p = .06), Communication (p = .09), Social development (p < .05), and Maladaptive Behavior (p = .11). Unlike previous findings for 'Year 5' grades (girls benefitted from academically focused kindergartens), girls' development in 'Year 7' benefitted most from having participated in a socioemotional kindergarten. This long-term benefit of Model ModAcK/SE for girls first appeared in 'Year 6' when fourth grade boys and girls from socioemotional kindergartens were found to have higher grades. The small sample of boys and presence of a highly maladapted boy in the ModAcK/SE group makes interpretation of boys' developmental data questionable, especially the finding of higher 'Year 7' development for ModAcK compared to ModAcK/SE boys.

Summary: Effect of Kindergarten Model

For boys who participated in Pre-K/Head Start prior to kindergarten entry, a socioemotional kindergarten experience was associated with greater school success in 'Years 5 and 6.' The reverse pattern was found for girls who appeared to benefit more from an academically focused kindergarten until fourth grade. At that time, both boys and girls who had attended socioemotional kindergarten, and who had not been previously retained, excelled. Third grade CTBS scores, as well as 'Years 6 and 7' developmental scores of these children were also higher. Therefore, when Pre-K/Head Start is followed by a socioemotional kindergarten experience, enhanced academic and developmental competence by fourth grade can be anticipated. These effects should be particularly noticeable in boys, appearing as early as their fifth year in school (i.e., third grade if not previously retained).

Children who enter school for the first time as kindergartners appeared to benefit more from an academically focused kindergarten prior to fourth grade. However, similar to classmates who had attended Pre-K/Head Start, by fourth grade both K-only boys and girls who had attended socioemotional kindergartens, and who had not been previously retained, excelled in the classroom. Unlike children with Pre-K/Head Start experience, the type of

kindergarten did not effect third grade CTBS scores of "on schedule" K-only children.

Clearly, children who enter school for the first time as kindergartners are differentially effected by that experience. Later performance of K-only girls more closely resembles that of Pre-K/Head Start boys, with both groups benefiting most from socioemotional kindergarten experiences. The greatest difference appears between boys who do or do not attend Pre-K/Head Start prior to kindergarten. While K-only boys and Pre-K/Head Start girls are most similar in age when they begin kindergarten, K-only boys are significantly older than Pre-K/Head Start boys when they enter kindergarten, and K-only girls are younger than Pre-K/Head Start girls when they begin kindergarten. Such differences could explain why K-only boys and Pre-K/Head Start girls respond more favorably to academically-focused kindergartens, while Pre-K/Head Start boys and K-only girls benefit more from a socioemotional kindergarten experience.

Possible differences in maturation may have allowed some children to better process the verbal instructions typical of didactic instruction of the ModAcK programs, while children with a slower rate of development required the more "hands-on manipulation" approach found in less didactic ModAcK/SE classrooms. Alternatively, variations in social development may also explain sex by program interactions found in this current research. Were some children more in need of continued nurturing, or others just more willing to comply with the developmentally inappropriate demands of ModAcK programs? Whatever the reason, children who excelled in fourth grade had attended socioemotional kindergartens.

TRANSITION FROM EARLY TO LATER CHILDHOOD GRADES

For children who attended Pre-K/Head Start, 'Year 5' in school typically marks the end of the primary grades (third grade) and 'Year 6' signifies the beginning of upper elementary (fourth grade). For many children this transition is cognitively difficult because of increased expectations for independent thought, application of previously learned concepts to new problems, and mastery of more difficult skills and ideas. The transition can also be socially difficult as expectations for student maturity are also increased. Children must make a qualitative leap forward if they are to successfully transition from the primary grades to the increased demands of upper elementary. This follow-up study examined possible influences on children's success.

Pre-K/Head Start Model: Effect on Grades. Grades of "on schedule" third graders who had attended Pre-K/Head

Start were compared with subsequent grades earned by these same children in the fourth grade (n = 106). As shown in Table 13, there was a notable interaction between year in school and the type of Pre-K/Head Start program children had attended. In fact, only children who had participated in child-initiated preschool programs (Model CI) increased overall classroom performance (GPA) from third to fourth grade ($p < .01$). This increase in overall GPA indicated that more active, child-initiated early learning experiences facilitated children's transition to the demands of upper elementary education. The same was true of grades earned in math ($p = .12$), reading ($p = .10$), spelling ($p < .05$), science ($p = .06$), and health/PE ($p < .05$). Although not statistically significant, a similar pattern was found for handwriting, art, and citizenship grades. In social studies, only Model CI children "held their own" in the transition from third to fourth grade, whereas Model M and Model AD children dropped. Model AD also declined in music grades, and all fourth graders earned lower language grades than they had in third grade.

Examination of 'Year 5' to 'Year 6' grades for all 'Class of 2000' children (n = 139, including "on schedule" and those retained prior to third grade) yielded similar results. Only children who had participated in child-initiated preschool programs (Model CI) showed increases in overall GPA ($p < .01$), math ($p < .05$), reading ($p < .05$), language ($p = .06$), spelling ($p = .10$), health/PE ($p < .05$), and citizenship ($p = .10$). It appears that the long-term positive effects of a more active, child-initiated early learning experience show up between the fifth and sixth year of school for children who begin school at age four. Furthermore, by age nine the long-term negative effects of an overly academic early learning experience are apparent.

Kindergarten Model: Effect on Grades. Third and fourth grades were available for 88 "on schedule" children from the 'Class of 2000' who had attended Pre-K/Head Start prior to kindergarten entry and for whom the type of kindergarten experience (ModAcK/SE or ModAcK) was known. Analyses indicated no statistically significant interaction between year in school and the type of kindergarten model children had attended. The same was generally true of 'Year 5' to 'Year 6' grades for all 'Class of 2000' children (n = 116, including "on schedule" and those retained prior to third grade). The only exception was found in art grades ($p < .05$) with children from socioemotional kindergartens decreasing from 'Year 5' to 'Year 6.' Failure to find kindergarten model as a factor in children's transition from third to fourth grade is likely due to the interaction between model and children's sex. Looking at the combined effect on boys and girls could have masked the transitional efficacy of either model.

Grades of "on schedule" K-only third graders were compared with subsequent grades earned by these same children in the fourth grade (n = 37). Unlike their Pre-K/Head Start counterparts, K-only children from academically focused kindergartens had somewhat more difficulty making the transition from primary to upper elementary. Overall GPA and all subject area grades dropped from third to fourth grade for ModAcK children as follows: GPA 10% lower (p = .14), math 4% lower, reading 17% lower, language 18% lower, spelling 12% lower, handwriting 9% lower, social studies 25% lower (p < .01), science 18% lower (p = .13), art 2% lower, music 1% lower, health/PE 1% lower, and citizenship 28% lower. Although ModAcK/SE children also dropped in overall GPA (<1% lower) and in 7 of 11 subject areas. This average 5% decline was smaller than the 12% decline observed in grades of ModAcK children. Art and citizenship grades of ModAcK/SE children improved from third to fourth grade (10% and 7% increase respectively). The same was generally true of 'Year 5' to 'Year 6' grades for all 'Class of 2000' K-only children (n = 53, including "on schedule" and those retained prior to third grade). ModAcK dropped an average of 8% in overall GPA, whereas the drop for ModAcK/SE children was less than 1% with no change in science or citizenship grades and increases in math (5%), art (20%), and music (11%) found from 'Year 5' to 'Year 6' grades of ModAcK/SE children.

Sex Differences in Transition: Effect on Grades. Although girls typically earned higher grades than boys, there was no discernable difference between boys' and girls' ability to successfully transition from third to fourth grade. This was true of all children, regardless of whether or not they had attended Pre-K/Head Start and whether they were or were not "on schedule."

Summary: Transition. Overly academic early learning experiences impact negatively on children's ability to successfully transition from the primary grades to upper elementary. Children whose first school experience is an academically focused kindergarten have more difficulty making the transition. The long-term positive effects of a more active, child-initiated early learning experience show up between the fifth and sixth year of school for children who begin school at age four.

ACADEMIC AND DEVELOPMENTAL PROGRESS

Grades: First Grade to 'Year 6'. Changes in grades from first grade to 'Year 6' were analyzed for effect of preschool and kindergarten models ('Class of 2000,' n = 127). While kindergarten model was not a factor in notable grade shifts for children who entered school at age four, Pre-K/Head Start model did affect student progress. As seen in Table 14, Model CI children "held their own" in overall

GPA from first grade through 'Year 6' in school, while the GPA of Model M and AD children dropped (5% and 18% respectively) from first to fourth grade. There was a significant interaction between Pre-K/Head Start model and year for GPA ($p < .01$), math ($p < .05$), reading ($p < .01$), language ($p = .06$), spelling ($p < .05$), social studies ($p < .05$), science ($p < .05$), and health/PE ($p < .01$). In each case, grades of Model AD children decreased most over time with a 29% drop in math, 27% drop in reading, 25% lower language grades, 22% decline in spelling, 27% lower social studies grades, 20% drop in science, and 16% lower health/PE grades. Interestingly, 'Year 6' reading grades of Model CI children were 9% higher than they had been in first grade.

Similar to classmates who attended preschool prior to kindergarten entry, progress of K-only children was not particularly affected by kindergarten model. However, the GPA of K-only children who had attended socioemotional kindergartens (ModAcK/SE) increased by 3% from first grade to 'Year 6' while the GPA of K-only children whose kindergarten experience focused on academic preparation (ModAcK) declined by 5% during the same period. More specifically, K-only ModAcK/SE children gained in math (4% increase, $p = .09$), science (4% increase, $p = .16$), and citizenship (20% increase, $p < .05$) while K-only ModAcK children dropped 18%, 12%, and 5% respectively in these same areas from first grade to 'Year 6.'

Development: Pre-K/Head Start to 'Years 6 and 7'. Vineland scores for the 'Class of 2000' and 'Class of 2001' measured children's development at 'Year 7' and 'Year 6' respectively. The two cohorts differed in developmental patterns attributable to the various preschool models. In the 'Class of 2001,' 'Year 6' Daily Living skills ($p < .05$) and Social development ($p < .001$) had increased since preschool for all three models, while only Model M children showed corresponding gains in Communication skills ($p < .001$) and Composite Adaptive Behavior ($p < .01$). In the 'Class of 2000,' 'Year 7' Communication skills were lower than they had been in preschool for all three models ($p < .01$). Although Model M and CI children gained in Social development since preschool, by 'Year 7' Model AD children had made little additional progress in Social development ($p < .01$). Finally, Model M children also showed improvement in Daily Living skills ($p = .09$) and Composite Adaptive Behavior ($p < .01$) since preschool.

Development: Kindergarten to 'Years 6 and 7'. The two cohorts had similar developmental patterns attributable to kindergarten models, showing general improvement since entering kindergarten. In the 'Class of 2001' ($n = 52$), 'Year 6' Composite Adaptive Behavior ($p = .06$), Daily Living skills ($p < .05$), and Social development ($p < .001$) had increased since kindergarten for both models. However, only

children who had attended socioemotional kindergartens showed an increase (5%) in Communication skills, while children from academically focused kindergartens decreased since kindergarten (7% lower, $p = .12$). In the 'Class of 2000' ($n = 76$), 'Year 7' Communication skills ($p < .01$), Daily Living skills ($p < .05$), and Social skills ($p < .001$) increased since kindergarten for both models. However, while Composite Adaptive Behavior increased by 8% for children who had attended socioemotional kindergartens, children from academically focused kindergartens showed a 1% decrease in Adaptive Behavior since kindergarten ($p = .15$).

For K-only children from the 'Class of 2000' ($n = 28$), 'Year 7' Social development had increased ($p < .001$) since kindergarten. Children from socioemotional kindergartens increased by 23% in this area, while those from academically focused kindergarten programs showed a 10% gain since kindergarten. While ModAcK children's Adaptive Behavior remained unchanged since kindergarten, by 'Year 7' there was a 10% increase in the Composite Adaptive Behavior score of K-only children who had attended socioemotional kindergartens.

Summary: Academic and Developmental Progress. Children whose first school experience is an academically directed preschool show the greatest decline in school grades between first and fourth grade. Although less consistent, there is also some indication that children whose first school experience is an academically focused kindergarten also make less progress by fourth grade than do children whose first school experience is more socioemotional in nature. Patterns of developmental change from pre-primary to primary and upper elementary grades are more difficult to identify, although children with overly academic preschool experiences had not advanced as rapidly in social development.

OTHER FACTORS IMPACTING ACADEMIC AND DEVELOPMENTAL PROGRESS

Transiency. In the combined 'Class of 2000' and 'Class of 2001' sample, 44% of the Pre-K/Head Start children and 40% of the K-only children had moved prior to entering third grade. The impact of having changed schools was examined for 'Year 5' grades, third grade standardized achievement test scores, and 'Years 6 and 7' development. While Vineland developmental scores and CTBS achievement scores were not statistically different for children who had or had not moved, there was a notable effect of transiency on 'Year 5' grades. As shown in Table 15, Pre-K/Head Start children who moved prior to third grade received significantly lower grades in all subject areas except art. A similar discrepancy existed for K-only children who had moved prior to third grade, with these differences also statistically significant for all areas except art, music, and health/PE.

In the 'Class of 2000,' 14% of the Pre-K/Head Start and 10% of the K-only children moved between 'Year 5' and 'Year 6' of school. Although changing schools between primary and upper elementary grades did not impact children's developmental scores, overall GPA and grades in 7 of 11 subjects were once again significantly lower in the Pre-K/Head Start children who had moved. However, moving between third and fourth grade did not significantly impact the grades of K-only children.

Although moving prior to third grade did not increase the chance of being retained prior to third grade, it did have an impact on retentions after 'Year 5' in school ($p < .01$). Further examination of the 'Class of 2000' indicated that moves prior to first grade were not as detrimental to children's progress as were school changes that occurred after the first grade. In fact, 71% of those who were being retained after 'Year 5' had changed schools since first grade. However, there is no way to determine whether the change in schools caused later academic difficulties that led to retention or whether families had intentionally moved with the hope of making a new start and alleviating prior school difficulties. Either way, schools receiving new students after first grade should be alerted to the retention risk such students pose. Post-first grade transfers will need more help in adjusting to their new school setting in order to successfully make the transition from primary to upper elementary.

Absences. When this study began, 4-year-old children who missed more than 20 days of school were described as having an attendance problem, those who missed between 9 and 20 days of school were marginal, and fewer than nine absences was regarded as satisfactory. The percentage of children with attendance problems was as follows: (a) Pre-K/Head Start - 7%, (b) kindergarten - 3% Pre-K/Head Start, 14%
K-only, (c) first grade - 7% Pre-K/Head Start, 13% K-only, (d) 'Year 5'/3rd grade - 12% Pre-K/Head Start, 8% K-only, and (e) 'Year 6'/4th grade - 12% Pre-K/Head Start, 10% K-only. This follow-up study examined the impact of poor school attendance on subsequent grades ('Years 5 and 6'), standardized achievement test scores, and children's development ('Years 6 and 7').

Impact on development. For those who had attended Pre-K/Head Start, current ratings of development showed no significant effect of school attendance on any developmental area. Poor attendance in Pre-K/Head Start, or kindergarten, or first grade, or 'Year 5' did not affect standardized measures of Pre-K/Head Start children's adaptive behavior or nonacademic functioning. However, among K-only children, Daily Living skills were less well developed among those who had attendance problems during kindergarten ($p = .10$).

Furthermore, K-only children who missed more than 20 days of school during 'Year 6' were rated significantly lower on all 'Year 7' Vineland measures of development and significantly higher in maladaptive behavior.

Impact on achievement scores. Although attendance problems in third grade were associated with significantly lower CTBS scores in all areas except science (see Table 16), earlier attendance problems were not predictive of lower third grade achievement scores among children who had attended Pre-K/Head Start. Surprisingly, children who had attendance problems in Pre-K/Head Start scored higher in science ($p = .09$) and social studies ($p < .01$). Those who had attendance problems in kindergarten also outperformed third grade classmates in reading ($p < .05$), word attack skills ($p < .05$), vocabulary ($p = .06$), reading comprehension ($p < .05$), and social studies ($p = .06$). Thus, only Pre-K/Head Start children who missed specific material covered during third grade exhibited difficulties on these standardized measures of achievement.

Among K-only third graders, lower CTBS scores were found only in the group of children who had missed more than 20 days during third grade. However, these differences were not statistically significant. Unlike their Pre-K/Head Start classmates, kindergarten attendance problems were associated with lower third grade test performance in the K-only group. These children scored significantly lower in vocabulary skills ($p = .11$), spelling ($p < .05$), language mechanics ($p < .01$), language expression ($p = .08$), mathematics ($p < .05$), science ($p = .09$), and total CTBS battery ($p = .09$). Poor kindergarten attendance may be caused by different factors and reflect different problems in the K-only versus the Pre-K/Head Start group. Long-term negative consequences of poor kindergarten attendance were apparent only for the group of children who had no preschool experience prior to kindergarten entry.

Impact on grades. Poor attendance had its most notable impact on grades. As shown in Table 16, although attendance problems during Pre-K/Head Start did not significantly effect 'Year 5' grades, by 'Year 6' these children had a significantly lower GPA ($p < .001$), as well as lower grades in math ($p < .01$), reading ($p < .001$), language ($p < .05$), spelling ($p < .01$), handwriting ($p < .01$), social studies ($p < .05$), art ($p = .09$), and citizenship ($p < .001$). For children who had attended Pre-K/Head Start, the effect of poor kindergarten attendance on 'Year 5' and 'Year 6' grades was minimal. The same was true of poor first grade attendance. As expected, poor 'Year 5' attendance resulted in significantly lower 'Year 5' grades in all subjects except art, and poor 'Year 6' attendance resulted in significantly lower 'Year 6' grades in all subjects except health/PE (see Table 17).

Among K-only children, kindergarten attendance problems had little impact on 'Year 5' grades, but were associated with greater difficulties in 'Year 6' as reflected by a lower GPA ($p = .07$) and lower grades in all subject areas (see Table 16). Thus, it appears that excessive absences during children's first year in school translate into difficulty at the point of transition from primary to upper elementary. Perhaps whatever factors affect children's initial transition to school reappear at the next crucial period of transition in their educational careers. Consequently, reasons for excessive absences during the initial school experience should be identified and monitored as possible indicators of future transitional difficulties.

Interestingly, for K-only children poor attendance in 'Year 5' or 'Year 6' did not have the same effect on grades as seen in classmates who had attended Pre-K/Head Start. Whereas lower grades of Pre-K/Head Start children were associated with increased absences, 'Year 5' and 'Year 6' grades of K-only children with marginal attendance problems were less predictable. As shown in Table 18, 'Year 5' grades showed no significant differences related to 'Year 5' attendance although overall GPA and 4 of 11 subject area grades were higher in children with fewest absences. 'Year 6' GPA ($p < .05$) and grades in social studies ($p = .10$), science ($p < .05$), art ($p < .05$), music ($p = .07$), and citizenship ($p < .01$) were significantly higher in children with fewest absences.

Summary: Transiency and Absences. Changing schools had a negative impact on children's grades although corresponding deficits in standardized measures of achievement and development were not found. Children who move after first grade are at higher risk for retention between the primary and upper elementary grades. Another factor associated with difficulty in making the transition from primary to upper elementary shows up during children's first year in school in the form of excessive absences. It is possible that whatever factors affect children's initial transition to school reappear at the next crucial period of transition in their educational careers. Thus, children who change school after first grade and/or who have excessive absences during their first year of school will need more help adjusting to their new school experiences. The anticipated result of such early intervention would be reduced transitional difficulties of children upon leaving the primary grades.

PARENT INVOLVEMENT: INFLUENCE ON CHILDREN'S SCHOOL SUCCESS

In the initial "Early Learning and Early Identification" study, children's Pre-K/Head Start, kindergarten, and first grade teachers were interviewed to

determine extend of contact they had with each child's parent(s) during the school year. Categories of contact included: parent-teacher conference, home visit by teacher, extended class visit by parent, and parental help with class activity. In this follow-up study, 'Year 5' teachers of the 'Class of 2001' and 'Year 6' teachers of the 'Class of 2000' were also interviewed. At each grade level, two groups of children were identified based upon low (0 or 1 category fulfilled) or high (3 or 4 categories fulfilled) parent-school contact. Current indicators of school competence, academic achievement, and children's development were analyzed for effects of parent involvement.

School Competence

Children who attended Pre-K/Head Start. Incidence of special education placement and retention in grade were examined in a combined sample (n = 186) of the 'Classes of 2000 and 2001' for any influence of earlier parent involvement on current school performance of children who had attended Pre-K/Head Start. While parent involvement during Pre-K/Head Start or kindergarten had no significant impact on placement in special education prior to third grade, low parent involvement during kindergarten did affect later retention rates. Significantly more children whose parents had not been involved during kindergarten were retained prior to third grade (high = 10.9% retained, low= 25.8% retained, $p < .05$), and significantly more were also recommended for retention after 'Year 5' in school (high = 4.3%, low = 16.7%, $p < .05$).

Examination of data from the 'Class of 2000' (n =63) indicated that parent involvement during first grade did have an impact on special education placement after third grade. While none of the children whose parents had been involved during first grade were found in special education, by 'Year 6' in school 15.2% of children whose parents had been uninvolved during first grade received special education services ($p < .01$). Likewise, low first grade parent involvement was associated with increased retention prior to 'Year 6' in school (high = 13.3% retained, low = 41.9% retained, $p < .01$). For the 'Class of 2000' (n = 88), the likelihood of retention after 'Year 6' in school was greater among children whose parents had been uninvolved during kindergarten (high = 4.3% being retained, low = 16.7% being retained, $p < .05$).

K-only Children. Incidence of special education placement and retention in grade were examined in the 'Class of 2000' for any influence of earlier parent involvement on current school performance of children who first entered school as kindergartners. While parent involvement during kindergarten had no significant impact on placement in special education prior to third or fourth grade, low parent involvement during kindergarten did affect

later retention rates. Notably, more K-only children whose parents had not been involved during kindergarten were retained prior to 'Year 6' in school (high = 15% retained, low= 33.3% retained, p = .14), and significantly more were also recommended for retention after 'Year 6' in school (high = 0%, low = 11.1%, p = .06). Although current levels ('Year 6') of parent involvement did impact on decisions to retain K-only children after 'Year 6,' parents of children who had been retained prior to 'Year 6' were less likely to be currently involved with their children's school (high 'Year 6' involvement = 14.8% retained prior to 'Year 6,' low 'Year 6' involvement = 34.4% retained prior to 'Year 6,' p = .08).

Academic Achievement: 'Year 5' Grades

Children who attended Pre-K/Head Start. Grades in a combined sample (n = 183) of the 'Classes of 2000 and 2001' were examined for any influence of earlier parent involvement on current school performance of children who had attended Pre-K/Head Start. Although 'Year 5' grades of children whose parents had been involved during Pre-K/Head Start were typically higher than those who had not been involved, these differences were only statistically significant for citizenship grades (high = 2.66, low = 2.20, p < .01). Furthermore, the two cohorts showed somewhat different effects of Pre-K/Head Start involvement, with fewer differences found for the 'Class of 2000' than the 'Class of 2001.' However, both groups were consistent in showing better behavior at 'Year 5' if parents had been involved when children first entered school at age four.

Parent involvement during kindergarten, children's second year of school for those who had attended Pre-K/Head Start (n = 108), had a definite impact on 'Year 5' grades. The higher grades of children whose parents had been involved during kindergarten (see Table 19) were statistically significant for overall GPA and all subject areas except spelling, handwriting, and art. The impact of kindergarten involvement on the 'Class of 2000' children was especially noticeable, although the pattern was similar for children in the 'Class of 2001.'

No statistically significant effect of parent involvement during first grade (n = 46) was found for children who had attended Pre-K/Head Start. However, children whose parents had been involved during first grade had a higher 'Year 5' GPA (high = 2.74, low = 2.68) and higher grades in all subject areas except math, reading, and citizenship.

The effect of more recent parent involvement was examined ('Class of 2001', n = 99, see Table 20). Children whose parents were involved in their fifth year of school had a higher overall 'Year 5' GPA and higher grades in all

subject areas except art. These differences were statistically significant for handwriting ($p < .01$), social studies ($p = .06$), science ($p = .06$), music $p < .05$), and health/PE ($p = .10$).

K-only children. 'Year 5' grades of children in the 'Class of 2000' ($n = 33$) who first entered school as kindergartners were examined for any influence of earlier parent involvement on current school performance. With the exception of health/PE ($p < .05$), there were no significant differences between children whose parents had or had not been involved during their first year of school, and 'Year 5' health/PE grades of involved K-only children were lower than those of children whose parents had not been involved during kindergarten (high = 2.74, low = 3.34).

Although the sample of K-only children with information on first grade parent involvement and 'Year 5' grades was small ($n = 16$), the pattern was similar to that found for Pre-K/Head Start children during their second year of school. As shown in Table 19, K-only children whose parents had been involved during their second year of school (first grade) had a higher 'Year 5' overall GPA ($p = .08$) and higher grades in all subject areas except handwriting, art, and music. Grades in health/PE were comparable for high and low parent involvement. These differences were statistically significant for language ($p < .01$), spelling ($p = .06$), social studies ($p < .01$), and science ($p < .05$). Therefore, parent involvement during children's second year in school (kindergarten for those who had attended Pre-K/ Head Start, first grade for K-only) was associated with greater 'Year 5' achievement.

Academic Achievement: 'Year 6' Grades

Children who attended Pre-K/Head Start. Grades of the 'Class of 2000' ($n = 94$) were examined for any influence of earlier parent involvement on current school performance of children who had attended Pre-K/Head Start. No significant differences in 'Year 6' grades of children whose parents had or had not been involved during Pre-K/Head Start were found. In fact, only 'Year 6' citizenship grades of high involvement children were higher than those whose parents had been uninvolved (high = 2.51, low = 2.38) during children's first year in school. This long-term impact of parent involvement on children's behavior is similar to 'Year 5' findings for both cohorts.

As was also true of 'Year 5' grades, parent involvement during kindergarten (children's second year of school for those who had attended Pre-K/Head Start) had a definite impact on 'Year 6' grades of the 'Class of 2000' ($n = 83$). The higher grades of children whose parents had been involved during kindergarten (see Table 21) were

statistically significant for overall GPA and all subject areas.

With the exception of higher 'Year 6' citizenship grades (high = 2.99, low = 2.36, $p = .09$), no statistically significant effect of parent involvement during first grade was found for children who had attended Pre-K/Head Start ($n = 59$). However, children whose parents had been involved during first grade had a higher 'Year 6' GPA (high = 2.61, low = 2.51) and higher grades in all subject areas except reading, handwriting, and social studies.

The effect of more recent parent involvement was examined ('Class of 2000', $n = 114$, see Table 20). Children whose parents were involved in their sixth year of school had a higher overall 'Year 6' GPA and higher grades in all subject areas except art and music. Grades in health/PE were approximately equal. These differences were statistically significant for GPA ($p < .05$), math ($p = .07$), reading ($p = .07$), language ($p < .01$), spelling ($p < .05$), hand-writing ($p < .05$), and social studies ($p < .05$).

K-only children. 'Year 6' grades of children in the 'Class of 2000' ($n = 47$) who first entered school as kindergartners were examined for any influence of earlier parent involvement on current school performance. No significant differences between children whose parents had or had not been involved during their first year of school were found, and 'Year 6' math and language grades of involved K-only children were lower than those of children whose parents had not been involved during kindergarten.

Although the sample of K-only children with information on first grade parent involvement and 'Year 6' grades was small ($n = 28$), the pattern was similar to that found for Pre-K/Head Start children during their second year of school. As shown in Table 21, K-only children whose parents had been involved during their second year of school (first grade) had a higher 'Year 6' overall GPA ($p < .01$) and significantly higher grades in all subject areas except art, music, and citizenship. Therefore, parent involvement during children's second year in school (kindergarten for those who had attended Pre-K/Head Start, first grade for K-only) was also associated with greater 'Year 6' achievement.

The effect of more recent parent involvement for K-only children was examined ('Class of 2000', $n = 60$). Children whose parents were involved in their sixth year of school had a higher overall 'Year 6' GPA (high = 2.59, low = 2.43) and higher grades in all subject areas except math, handwriting, art and music. However, none of these differences were statistically significant.

Academic Achievement: Third Grade Standardized CTBS Scores

Children who attended Pre-K/Head Start. CTBS scores in a combined sample (n = 150) of the 'Classes of 2000 and 2001' were examined for any influence of earlier parent involvement on achievement test scores of children who had attended Pre-K/Head Start. Although children whose parents were involved during Pre-K/Head Start scored the same as or slightly higher than children of noninvolved parents on all CTBS measures except science, these differences were minimal and not statistically significant.

Parent involvement during kindergarten, children's second year of school for those who had attended Pre-K/Head Start (n = 88), had a definite impact on third grade standardized CTBS achievement scores. As shown in Table 22, children whose parents had been involved during kindergarten scored higher on all measures except spelling where both groups' scores were comparable. These differences were statistically significant for reading ($p < .05$), word attack skills ($p < .01$), vocabulary ($p < .01$), reading comprehension ($p < .05$), language ($p = .08$), language mechanics ($p < .05$), mathematics ($p = .08$), math computation ($p = .07$), social studies ($p < .01$), and total battery score ($p = .07$).

No statistically significant effect of parent involvement during first grade ('Class of 2000,' n = 38) was found for children who had attended Pre-K/Head Start. Children of both involved and uninvolved parents scored similarly on third grade measures of reading, math, science, social studies, and total battery. The largest difference was seen in language skills, with lower performance found for children whose parents had been involved during first grade (high = 59.89, low = 68.98, $p = .24$).

The effect of more recent parent involvement was examined ('Class of 2001,' n = 77). Although children whose parents were involved in their fifth year of school scored higher in all areas measured except word attack skills and spelling, these differences were only statistically significant for science (high = 63.29, low = 51.10, $p < .05$) and social studies (high = 58.98, low = 50.45, $p = .10$).

K-only children. Third grade standardized CTBS scores of children in the 'Class of 2000' (n = 20) who first entered school as kindergartners were examined for any influence of earlier parent involvement on current school performance. No statistically significant differences were found between scores of children whose parents had or had not been involved during kindergarten. In fact, lower performance on all measures was found for children whose parents had been involved, with the largest difference seen in reading (high = 51.88, low = 60.67, $p = .21$) and social studies (high = 51.81, low = 63.97, $p = .30$).

Although the sample of K-only children with information on first grade parent involvement and third grade CTBS scores was small (n = 14), the pattern was similar to that found for Pre-K/Head Start children during their second year of school. As shown in Table 22, K-only children whose parents had been involved during their second year of school (first grade) scored higher in all areas measured. These differences showed a statistical trend towards significance for reading (p = .07), word attack skills (p = .07), vocabulary (p = .07), reading comprehension (p = .15), spelling (p = .08), and science (p = .15). Thus, as was also true of school grades, students whose parents were involved during their second year in school (kindergarten for Pre-K/Head Start, first grade for K-only) demonstrated higher academic achievement at the end of the primary grades than did children whose parents had been uninvolved.

Children's Development: 'Year 6'

Children who attended Pre-K/Head Start. Current Vineland Adaptive Behavior scores of children from the 'Class of 2001' were examined for any influence of earlier parent involvement on current development of children who had attended Pre-K/Head Start. Although no statistically significant differences were found between children whose parents were or were not involved during Pre-K/Head Start (n = 76), an interaction between children's sex and parent involvement was noted. In each case, 'Year 6' development of boys was higher if their parent(s) had been involved in their first educational experience at age four. A statistical trend towards significance for this interaction was found for Composite Adaptive Behavior (p = .15), Daily Living skills (p = .10), and Social development (p = .15). Furthermore, the incidence of maladaptive behavior in boys whose parents had been involved during Pre-K/Head Start was, by 'Year 6' in school, 53% lower than that of boys whose parents had not been involved when their children first entered school at age four (high = 5.53, low = 11.73, p = .10).

As shown in Table 23, parent involvement during kindergarten, children's second year of school for those who had attended Pre-K/Head Start ('Class of 2001,' n = 35), appeared to affect 'Year 6' development. Children whose parents had been involved during kindergarten scored higher on all measures except Daily Living Skills where both groups' scores were comparable. A statistical trend towards significance was found for Social development (p = .11). An interaction between parent involvement during kindergarten and children's sex was also found, but this time it was girls' development that seemed to benefit most from parent involvement at age five. 'Year 6' Composite Adaptive Behavior was higher in girls whose parents had been involved during kindergarten ($p < .05$), as was also true of Communication skills (p = .08), Daily Living skills (p =

.08), and Social development (p = .10). The overall incidence of maladaptive behavior was 42% lower in children whose parents had been involved during kindergarten (high= 5.22, low = 9.07), and for girls there was a 78% lower incidence of maladaptive behavior in 'Year 6' if their parents had been involved during children's second year in school (high = 2.39, low = 10.67).

The effect of more recent parent involvement was examined ('Class of 2001,' n = 73). Children whose parents were involved in their fifth year of school scored higher in all areas of development measured by the Vineland. These differences were statistically significant for Composite Adaptive Behavior (high = 106.52, low = 99.36, p = .10), Communication (high = 101.12, low = 91.81, p < .05), and Social development (high = 107.70, low = 100.69, p = .06). There were no significant interactions between current parent involvement and sex. Although the incidence of maladaptive behavior in 'Year 6' was not significantly different for children whose parents were or were not currently involved, those with high involvement had a 40% greater incidence of maladaptiveness (high = 8.89, low = 6.35).

Children's Development: 'Year 7'

Children who attended Pre-K/Head Start. Current Vineland Adaptive Behavior scores of children from the 'Class of 2000' were examined for any influence of earlier parent involvement on current development of children who had attended Pre-K/Head Start.

Surprisingly, in the 'Class of 2000' sample (n = 80) children whose parents had been involved during Pre-K/Head Start had lower 'Year 7' scores in all developmental areas measured. For Social development, this difference was statistically significant (high = 95.29, low = 103.34, p < .05), and a trend towards significance was found for Composite Adaptive Behavior (high = 95.34, low = 101.36, p = .13). 'Year 7' development of girls was higher if their parent(s) had not been involved in their first educational experience at age four. A statistical trend towards significance for this interaction was found for Social development (p = .11) and Composite Adaptive Behavior (p = .12). No significant difference attributable to parent involvement during Pre-K/Head Start was found in the incidence of 'Year 7' maladaptive behavior.

Parent involvement during kindergarten, children's second year of school for those who had attended Pre-K/Head Start (n = 70), appeared to affect 'Year 7' development (see Table 23). Children whose parents had been involved during kindergarten scored higher on all measures. This difference was statistically significant for Social development (p < .01), and a trend towards significance was noted for

Composite Adaptive Behavior (p = .08). No interaction between parent involvement during kindergarten and children's sex was found. The overall incidence of maladaptive behavior was 15% lower in children whose parents had been involved during kindergarten.

The effect of first grade parent involvement was examined ('Class of 2000,' n = 49). Children whose parents were involved scored significantly higher in all areas of development measured by the Vineland. No interaction was found between first grade parent involvement and sex. The incidence of 'Year 7' maladaptive behavior was 59% lower in children whose parents had been involved during first grade (high = 2.56, low = 6.25, p = .09).

Parent involvement during 'Year 6' had no significant impact on 'Year 7' development. No interaction was found between this more recent parent involvement and sex. Nor was any difference found in the incidence of 'Year 7' maladaptive behavior that could be attributed to 'Year 6' parent involvement.

K-only children. Current Vineland Adaptive Behavior scores of children from the 'Class of 2000' were examined for any influence of earlier parent involvement on current development of children who first entered school as kindergartners.

As shown in Table 23, parent involvement during kindergarten, children's first year in school (n = 29), appeared to have no effect on 'Year 7' development. No statistically significant differences were found for children whose parents had or had not been involved during kindergarten. Nor were any interactions between parent involvement during kindergarten and children's sex noted. Although not significant, the overall incidence of maladaptive behavior was 34% lower in children whose parents had been involved during kindergarten (high= 7.96, low = 12.04).

The effect of first grade parent involvement was examined ('Class of 2000,' n = 20). Again, for K-only children parent involvement during their second year in school appeared to have no effect on 'Year 7' development. No statistically significant differences were found for children whose parents had or had not been involved during first grade. Nor were any significant interactions between parent involvement and children's sex noted, other than in a trend (p = .08) for increased 'Year 7' Daily Living skills in girls whose parents had been involved during first grade. No significant difference was found in the incidence of maladaptive behavior (high= 6.06, low = 6.30).

Unlike classmates who had attended Pre-K/Head Start, for K-only children (n = 46) parent involvement during 'Year

6' had an impact on 'Year 7' development. Children whose parents had been involved more recently scored higher on all measures. This difference was statistically significant for Social development (high = 110.85, low = 98.12, $p < .01$), and a trend towards significance was noted for Composite Adaptive Behavior (high = 107.83, low = 97.60, $p = .06$) and Communication (high = 101.02, low = 91.25, $p = .09$). Interaction between parent involvement during 'Year 6' and children's sex was found for K-only children in Composite Adaptive Behavior ($p = .09$), Communication ($p < .01$), and Daily Living skills ($p = .11$). In each case, K-only boys were found to especially benefit from more recent parent involvement. Although the difference was not significant, K-only children with high 'Year 6' parent involvement displayed a 24% higher incidence of 'Year 7' maladaptive behavior (high = 10.16, low = 8.21).

Predictors of Parent Involvement: Regression Analysis

Sample. Using regression analysis, a further examination of the 'Class of 2000' was conducted to identify demographic and school related predictors of parent involvement at various points in children's school careers. Data from a total of 245 children enrolled in 80 different schools were included in this analysis. Prior to entering first grade, 67% of the children (12% Head Start, 55% Pre-K) attended both preschool and kindergarten in the District of Columbia Public Schools. The remaining 33% were same sex, K-only controls. The sample used in this regression analysis was 96% African American and 51% female. Most children (80%) qualified for subsidized lunch based upon low family income, and 67% lived in single parent homes. Since these children were first studied, 53% had moved to another school and 30% had been retained prior to fourth grade.

Analysis variables. School, child, and family characteristics that may have influenced parent involvement were identified and entered into stepwise regression analysis for each grade level. School characteristics included: (a) type of preschool model (child-initiated, academically-directed, middle-of-the-road), and (b) kindergarten model (socioemotional vs. academic preparation) children had attended. Child characteristics included: sex, ethnicity, age, absences, and previous grade retention. Family characteristics included: socioeconomic status (SES), single- vs. two-parent family, mobility, and geographic location. At each subsequent grade level, earlier indicators of parent involvement were also included in regression analyses.

Regression models. For each grade level studied, Table 24 reports correlations and R^2 for predictor variables with significant beta weights for the criterion variable of parent involvement. The resulting regression models accounted for more variance in parent involvement among

Pre-K/Head Start children than among K-only controls (approximately 3% to 31% for Pre-K/Head Start children, 7% to 14% for K-only controls).

Children who attended Pre-K/Head Start. For Pre-K/Head Start children, enrollment in Head Start predicted greater parent involvement during preschool. In turn, higher levels of parent involvement during preschool predicted greater kindergarten involvement for parents of Pre-K/Head Start children. Higher levels of both Pre-K/Head Start and kindergarten involvement, along with growing-up in a two-parent family that had not moved, predicted high first grade parent involvement. High 'Year 6' parent involvement was predicted by previously high kindergarten involvement and a two-parent family.

A separate regression analysis examining type of preschool and kindergarten models predicted lower Pre-K/Head Start and kindergarten parent involvement associated with an academically-direct preschool model (Pre-K/Head Start: r = -.16, R^2 = .025, beta = -.2173, $p < .01$; kindergarten: r = -.25, R^2 = .064, beta = -.2522, $p < .001$). Similarly, enrollment in a kindergarten program that focused on academic preparation predicted lower first grade parent involvement (first grade: r = -.28, R^2 = .080, beta = -.2830, $p < .01$). Although the academically-focused kindergarten (Model ModAcK) was negatively related to 'Year 6' parent involvement (r = -.16, $p < .05$), model type was not a significant 'Year 6' predictor.

K-only children. Prediction of parent involvement for K-only controls was less successful. Being a younger kindergartner predicted greater parent involvement during kindergarten. Higher kindergarten involvement, in turn, predicted higher levels of first grade involvement. While kindergarten involvement was still positively related to 'Year 6' involvement (r = +.17, p = .09), only a single-parent family predicted most recent involvement. Although an academically-focused kindergarten (Model ModAcK) was negatively related to first grade involvement (r = -.24, $p < .05$), the type of kindergarten program did not predict 'Year 6' parent involvement for K-only control children.

Summary: Parent Involvement

Parent involvement has an important and enduring impact on children's progress in school. Low involvement during kindergarten increases children's chances of being retained at some point in their school career. Likewise, low first grade involvement may increase the likelihood of special education placement after third grade. Involvement during Pre-K/Head Start appears to have an enduring positive affect on children's behavior in the classroom. Parent involvement also affects children's grades and performance on standardized achievement tests, with involvement during

children's second year in school being especially critical for later school success. Likewise, for those who attended Pre-K/Head Start, parent involvement during children's second year in school has a positive affect on later development. In contrast, later development of children who first entered school as kindergartners was not affected by earlier involvement although more recent parent involvement had a positive influence. Parent involvement was easier to predict for children who had attended Pre-K/Head Start, with Head Start parents the most likely to be involved early in their children's school careers. Involvement during kindergarten was the most critical predictor of future involvement, although academically-focused kindergarten programs were less likely to encourage parent involvement.

The impact of parent involvement on school competence, academic achievement, and children's development found in this study is especially noteworthy because this study's involvement criteria are not difficult to promote. Of the four possible measures of involvement, most parents already performed two (usually attending a parent-teacher conference and either visiting the classroom or helping with a class activity). None of these categories of parent involvement require large amounts of time, yet the results from having completed just three of these activities are remarkable and enduring. Failing to fulfill even the most minimal expression of parent involvement (i.e., attending a conference with your child's teacher to receive their progress report), represents a clear danger to children's future school success. When this occurs in kindergarten, teachers should notify school counselors of the lack of involvement so that preventative measures can be taken immediately. Because the developmental appropriateness of kindergarten programs also affects the likelihood of parent involvement, a district-wide strategy to increase the socioemotional focus of DCPS kindergartens is important.

SCHOOL COMPETENCE: SPECIAL EDUCATION AND GRADE RETENTIONS

Special Education Placement

Other research studies have reported reduced likelihood of special education placement as one of the long-term benefits of early intervention. This follow-up study of children in the District of Columbia Public Schools examined incidence of special education placement and its correlates. By third grade few children who had attended Pre-K/Head Start were found in special education ('Class of 2000' = 1%, 'Class of 2001' = 4%, combined sample = 2.7%). By contrast, 3% of the K-only children in the 'Class of 2000' had been placed in special education. Although the percentages are small, findings for the 'Class of 2000' agreed with conclusions from other studies. However, by 'Year 6'

(fourth grade if not previously retained) special education placements in the 'Class of 2000' were comparable for children who had attended Pre-K/Head Start (10%) and K-only children (9%). Factors which may have affected placement were further explored.

Effect of preschool model. In a combined sample of the 'Classes of 2000 and 2001' (n = 337) no statistically significant differences between special education placement in third grade ('Year 5') were found for Pre-K/Head Start model. However, more children than expected from Model M (4%) were in special education while only 2% of Model CI and 1% of Model AD children were identified as needing these services. In this sample, no children who had attended socioemotional kindergartens (Model ModAcK/SE) were enrolled in special education programs, while 4% of those who attended academically-focused kindergartens received special education services by 'Year 5' of school (p = .06). The same was true for K-only children.

Special education placement after third grade showed no significant differences for preschool models. However, more children from academically-focused kindergartens (13% Pre-K/Head Start, 12% K-only) were found in special education compared with children from socioemotional kindergartens (7% Pre-K/Head Start, 7% K-only). No significant differences in special education placement were found between Head Start children (7%) and those who had attended DCPS Pre-K (11%).

Other factors affecting placement. Among those who had attended Pre-K/Head Start, there was a trend (p = .15) for more boys (4%) than girls (2%) to be placed in special education by third grade. However, after third grade, approximately equal percentages of boys (11%) and girls (9%) were found in special education. No sex differences in special education placement were found for K-only children. There was also a trend (p = .15) to find more Pre-K/Head Start children who had moved prior to third grade in special education (4% third grade special education, 12% post-third grade special education) compared to children who had not moved (2% third grade special education, 5% post-third grade special education). No significant differences in special education placement attributable to moving were found for K-only children.

Retention Prior to Third Grade

Factors affecting retention. In a combined sample of children from the 'Classes of 2000 and 2001' who had attended Pre-K/Head Start (n = 341), 20% had been retained prior to entering third grade. Of those retained, 56% had been retained in first grade, and 44% had been retained in second grade. No significant differences in retention rates were found for the three Pre-K/Head Start models (Model CI = 18% retained, Model M = 22% retained, Model AD = 13%

retained). Likewise, retention rates of children who had attended Pre-K/Head Start were similar for kindergarten model (ModAcK/SE = 22% retained, ModAcK = 23% retained). Significantly more Pre-K/Head Start boys than girls were retained prior to third grade (boys = 29%, girls = 9%, $p < .001$). There were also significantly more retentions among Pre-K/Head Start children who had moved prior to third grade (move = 24% retained, no move = 15% retained, $p < .05$).

Among K-only children 28% had been retained prior to entering third grade. Of those retained, 7% had been retained in kindergarten, 60% were retained in first grade, and 33% had been retained in second grade. No significant differences in retention rates were found for kindergarten model (ModAcK/SE = 32% retained, ModAcK = 24% retained). Unlike classmates who had attended Pre-K/Head Start, there was a trend for significantly more K-only girls than boys to be retained prior to third grade (girls = 36%, boys = 19%, $p = .12$). For K-only children, no significant differences in retentions prior to third grade were attributed to having moved prior to third grade (move = 35% retained, no move = 25% retained).

Impact on 'Year 5' grades. 'Year 5' grades in a combined sample of children in the 'Classes of 2000 and 2001' who had attended Pre-K/Head Start ($n = 331$) were examined. As shown in Table 25, overall GPA and grades in all subject areas were lower for children who had been retained. These differences were statistically significant for all subject areas except citizenship ($p = .31$). If grade retention was a successful strategy for remediating academic deficits, such differences should not have existed in children's grades following retention. Further examination of differences between children indicated that academic difficulties had been present during the pre-primary grades for Pre-K/Head Start children who were later retained. In both Pre-K/Head Start and kindergarten, children who were going to be retained prior to third grade earned significantly lower grades in all subject areas (see Table 26). The same was true in first grade ('Class of 2000,' $n = 116$) where all grades of children who were going to be retained prior to third grade were significantly lower (see Table 27).

K-only children displayed a similar pattern of earlier achievement that differentiated those who were retained prior to third grade. Examination of 'Year 5' grades of K-only children ('Class of 2000,' $n = 69$) found a lower GPA and lower grades in all subject areas for children who had been retained (see Table 25). However, none of these differences were statistically significant. Therefore, for children who first entered school as kindergartners grade retention may have been a useful strategy for remediating academic deficits in the primary grades. Further examination of differences between these children support

this possibility because K-only children who were going to be retained prior to third grade had shown earlier signs of academic difficulties. In both kindergarten (see Table 26) and first grade (see Table 27), future K-only retainees earned significantly lower grades in all subject areas.

Impact on 'Year 6' grades. 'Year 6' grades in a sample of children in the 'Class of 2000' who had attended Pre-K/Head Start (n = 138) were examined. As shown in Table 25, overall GPA and grades in all subject areas were lower for children who had been retained. These differences were statistically significant for all subject areas except health/PE (p = .29). If grade retention was a successful strategy for remediating academic deficits, such differences should not have existed in children's grades following retention.

Examination of 'Year 6' grades of K-only children ('Class of 2000,' n = 60) found a lower GPA and lower grades in all subject areas except music and health/PE for children who had been retained (see Table 25). However, these differences were only statistically significant for math (p < .01) and reading (p < .05). There was a trend towards significance for overall GPA (p = .10), spelling (p = .09), handwriting (p = .13), and citizenship (p = .14). The initially promising benefit of grade retention for K-only children appears to diminish as children advance in school and prepare to leave the primary grades. As expectations for math and reading accelerated, retention alone was an inadequate strategy for remediating deficits in these areas although K-only children were marginally able to meet accelerated expectancies in most other areas of study.

Impact on children's development. 'Years 6 and 7' Vineland scores for a combined sample of Pre-K/Head Start children from the 'Classes of 2000 and 2001' (n = 233) were examined for the impact of retention prior to third grade. As shown in Table 28, the adaptive behavior of children who had been retained was significantly lower in all areas measured. However, no differences in maladaptive behavior scores were found in 'Years 6 and 7.' Further examination of differences between children indicated that, although within the adequate range, development was lower during the pre-primary grades for children who were later retained. In both Pre-K/Head Start (n = 213) and kindergarten (n = 143), children who were going to be retained prior to third grade were rated significantly lower in all developmental areas except Social development and kindergarten Motor development (see Table 29).

'Year 7' Vineland scores for a sample of K-only children from the 'Class of 2000' (n = 47) were examined for the impact of retention prior to third grade. As shown in Table 28, the adaptive behavior of children who had been retained was significantly lower in all areas measured

except Social development. However, children who had been retained showed 48% less maladaptive behavior than peers (p = .10). Further examination of differences between K-only children indicated that, by kindergarten (n = 36), problems in adaptive development were already apparent for children who were later retained. K-only children who were going to be retained prior to third grade were rated significantly lower in all developmental areas. Furthermore, their development fell below the adequate range in all areas except Daily Living skills (see Table 29).

Retention After Third Grade

Factors affecting retention. In a combined sample of children from the 'Classes of 2000 and 2001' who had attended Pre-K/Head Start (n = 347), a total of 14% were being retained after 'Year 5' (7% being retained for first time). No significant differences in retention rates were found for the three Pre-K/Head Start models (Model CI = 16% retained, Model M = 14% retained, Model AD = 12% retained). Likewise, retention rates of children who had attended Pre-K/Head Start were similar for kindergarten model (ModAcK/SE = 15% retained, ModAcK = 14% retained). Although more Pre-K/Head Start boys (17%) than girls (12%) were being retained after third grade, this difference was not statistically significant. Pre-K/Head Start children who had moved prior to third grade were more likely to be retained after third grade (move = 20% retained, no move = 10% retained, $p < .01$).

Among K-only children, a total of 11% were being retained after 'Year 5' (10% being retained for first time). Although more K-only children who had attended academically focused kindergartens were being retained after third grade, this difference was not statistically significant (ModAcK/SE = 5% being retained after third, ModAcK = 14% being retained after third grade). Although a sex difference in retentions prior to third grade had been found for K-only children, retentions after third grade were evenly split between girls and boys. As was true of retentions prior to third grade, no significant differences in retentions after 'Year 5' were attributed to having moved prior to third grade.

Grades and post-third grade retentions: Children who attended Pre-K/Head Start. Third grade report cards for a combined sample of children in the 'Classes of 2000 and 2001' who had attended Pre-K/Head Start and who had not been previously retained (n = 267) were examined. As shown in Table 30, overall GPA and grades in all subject areas were significantly lower for children who were being retained at the end of third grade. Because these children had not been retained previously, further exploration of performance during children's pre-primary years was made in an effort to identify a possible basis for the academic difficulties that led to failure in third grade.

Ironically, children who failed third grade had done well in their first year of school, Pre-K/Head Start. As shown in Table 31 ('Classes of 2000 and 2001,' n = 174), in all areas they had surpassed classmates who would not later fail third grade. These early differences showed a trend towards statistical significance for overall GPA (p = .07), math/science (p = .08), reading/language (p = .08), and physical skills (p = .06). However, by their second year in school (kindergarten) these Pre-K/Head Start children had slipped notably in performance and now scored lower than their classmates in all areas (see Table 31, 'Classes of 2000 and 2001,' n = 127). These kindergarten differences were statistically significant for overall GPA ($p < .05$) and math/science ($p < .05$), with a trend towards significance evident for reading/ language (p = .09) and social skills (p = .10). In first grade (see Table 32, 'Class of 2000,' n = 85) these children were also performing below classmates although their grades were in the 'mid-C' range so first grade retention was not an issue. Differences were statistically significant for overall GPA ($p < .05$), math ($p < .01$), reading ($p < .001$), language ($p < .01$), spelling ($p < .05$), social studies (p = .06), and science ($p < .05$).

Pre-K/Head Start children who would not be retained until after third grade had displayed clearly adequate performance earlier in their school careers, and had even surpassed classmates at age four. Yet, by third grade their grades had slipped into the 'D' range or lower for all academically related subjects although they maintained 'mid-C' averages in art, music, and health/PE. Their classroom behavior had also fallen below average, perhaps in response to increased frustration with the academic demands of third grade.

A comparison of 'Year 6' grades for Pre-K/Head Start children who had not been retained prior to third grade but who may have been retained after third can be found in Table 30 ('Class of 2000,' n = 111). While academic subject grades of children who had been retained in third grade improved somewhat over their initial third grade performance (especially in math, reading, and spelling), they were still significantly lower in all areas compared to 'Year 6' grades of fourth grade classmates whose academic demands had increased with advancement to upper elementary. Unfortunately, a further drop in classroom behavior was also noted for Pre-K/Head Start children who had been retained in third grade ('Year 5' = 1.70, 'Year 6' = 1.49), and average performance in academic areas still failed to reach the 'C' range following third grade retention.

On the average, therefore, retention alone is not sufficient to remediate academic deficits that prevent children from passing onto the upper elementary grades. Consequently, for most Pre-K/Head Start children retention

is not the most effective means for dealing with academic or behavioral difficulties, and any recommendation to retain must be weighed against more viable solutions.

Grades and post-third grade retentions: K-only children. Third grade report cards for a sample of children in the 'Class of 2000' who first entered school as kindergartners and who had not been previously retained (n = 49) were examined. As shown in Table 30, overall GPA and grades in all subject areas were lower for K-only children who were being retained at the end of third grade. These differences were statistically significant for all subjects except music (p = .15), health/PE (p = .67), and citizenship (p = .89). Because these K-only children had not been retained previously, further exploration of children's earlier performance was made in an effort to identify a possible basis for the academic difficulties that led to failure in third grade.

Ironically, K-only children who failed third grade had done well in kindergarten, their first year of school. As shown in Table 31 ('Class of 2000,' n = 30), in all areas except math/science they had surpassed classmates who would not later fail third grade. These differences were not, however, statistically significant. By their second year in school (first grade) these K-only children had slipped somewhat in academic performance and now scored lower than their classmates in math (p = .16), reading (p = .11), language, spelling, social studies, and science (see Table 32, 'Class of 2000,' n = 35). However they surpassed classmates in nonacademic subjects and had excellent classroom behavior so first grade retention was not an issue although some deficits in math and reading were apparent.

K-only children who would not be retained until after third grade had displayed clearly adequate performance earlier in their school careers, and had even surpassed classmates in various kindergarten and first grade subjects. Yet, by third grade their grades had slipped into the 'D' range or lower for all academically-related subjects although they maintained 'mid-C' averages in music, health/PE, and citizenship. Although citizenship remained average, it declined by a full letter grade since first grade when the classroom behavior of these K-only children had been exemplary. As was possibly the case for Pre-K/Head Start classmates, this drop in behavior may also have been in response to K-only children's increased frustration with the academic demands of third grade.

A comparison of 'Year 6' grades for K-only children who had not been retained prior to third grade but who may have been retained after third can be found in Table 30 ('Class of 2000,' n = 40). Children who had been retained in third grade improved in all areas compared to their initial third grade performance. Although they were still lower in all

academic areas compared to 'Year 6' grades of fourth grade classmates these differences were marginally significant for only two subjects, reading (p = .14) and social studies (p = .08). Furthermore, they exceeded or equalled nonretained K-only peers in art, music, health/PE, and citizenship. Improvement in classroom behavior was especially promising ('Year 5' = 2.52, 'Year 6' = 2.88), and reflected a more positive response to third grade retention among K-only children than had been observed for Pre-K/Head Start children.

As was also true of retention prior to third grade, retention after third grade appears to have a different affect on K-only children than it does on children who have attended Pre-K/Head Start. In the short-term, retention appears to be a more beneficial strategy for K-only children than it is for Pre-K/Head Start children. This may be partially explained by the fact that K-only children in this follow-up study were more likely to live in two-parent families of somewhat higher socioeconomic status. If retained children receive no additional help from the school other than repeating the same material for a second year, any further help provided by children's families may be the critical factor in children's ability to benefit from retention. Families of K-only retainees may be more able to provide this necessary support.

K-only children who have been retained before or after third grade are, by 'Year 6' in school, overage for their third grade placement. With the exception of reading and social studies, K-only children retained after third grade do better in 'Year 6' than K-only children retained prior to third grade. Therefore, if retention of K-only children is recommended, for most children it would be advisable to wait until they have completed third grade.

Impact on children's development. 'Years 6 and 7' Vineland scores for a combined sample of Pre-K/Head Start children from the 'Classes of 2000 and 2001' who had not been previously retained (n = 190) were examined for the impact of retention after third grade. As shown in Table 33, the adaptive behavior of children who had been retained was lower in all areas measured, with these differences being statistically significant for Composite Adaptive Behavior ($p < .05$) and Communication skills ($p < .001$). Furthermore, Pre-K/Head Start children who had been retained after third grade displayed a 25% higher incidence of maladaptive behavior in 'Years 6 and 7.' Further examination of differences between Pre-K/Head Start children indicated that, unlike children who were retained prior to third grade, development of children who would be retained after third grade had been adequate during the pre-primary grades. As shown in Table 34, during both Pre-K/Head Start (n = 177) and kindergarten (n = 116), children who were

going to be retained after third grade were rated similarly to other children in all developmental areas except kindergarten Communication (p = .14) and kindergarten Daily Living skills (p = .11).

'Year 7' Vineland scores for a sample of K-only children from the 'Class of 2000' who had not been previously retained (n = 30) were examined for the impact of retention after third grade. As shown in Table 33, the adaptive behavior of children who had been retained was similar to other K-only children in all areas of development. Moreover, maladaptive behavior scores were 25% lower in K-only children who were retained after third grade. Further examination of differences between K-only children indicated that, in kindergarten (n = 28), some problems in Communication skills ($p < .05$) and Daily Living skills ($p < .05$) were apparent for K-only children who would later be retained (see Table 34). However, these same children appeared to make progress over the years, increasing most notably in development of Daily Living skills since kindergarten.

Retention After Fourth Grade

Factors affecting retention. In examining 'Year 6' data from the sample of children in the 'Class of 2000' who had attended Pre-K/Head Start (n = 184), a total of 10% were being retained after 'Year 6' (4% for first time). No significant differences in retention rates were found for the three Pre-K/Head Start models (Model CI = 8% retained, Model M = 10% retained, Model AD = 12% retained). Likewise, retention rates of children who had attended Pre-K/Head Start were not significantly different for kindergarten model (ModAcK/SE = 7% retained, ModAcK = 10% retained). Although more Pre-K/Head Start boys (12.5%) than girls (7%) were being retained after 'Year 6,' this difference was not statistically significant. Nor were there any differences in post 'Year 6' retentions between children who had attended Head Start and those who had attended pre-kindergarten (11% and 9% respectively). Pre-K/Head Start children who had moved prior to third grade were more likely to be retained after 'Year 6' (move = 17% retained, no move = 6% retained, $p < .05$). Children who had moved at least three times were most likely to be retained after 'Year 6' (33% being retained). For those who had moved twice, the most detrimental effects were found when moves occurred between kindergarten and first grade and then again between first and 'Year 5' in school (20% being retained). The highest 'Year 6' retention rate (25%) for single moves was found among Pre-K/Head Start children who had moved between kindergarten and first grade.

For the group of Pre-K/Head Start children who had never been retained, preschool model was a factor in retention after fourth grade (Model CI = 7% retained, Model

M = 0% retained, Model AD = 11% retained, $p < .05$). However, no significant differences attributable to kindergarten model were identified (ModAcK/ SE = 6% retained, ModAcK = 4% retained). Significantly more Pre-K/ Head Start boys (12%) than girls (3%) who had never been retained were being retained after fourth grade ($p < .05$). Likewise, significantly more children who had moved before third grade were now being retained (move = 19% retained, no move = 2% retained, $p < .01$). The only child who had moved at least three times was being retained after fourth grade although this child had successfully managed to pass each grade prior to the first year of upper elementary. Moving between kindergarten and first grade was also associated with a greater likelihood of being retained after fourth grade (25% being retained).

Of children who first entered school during kindergarten, 6% were being retained after 'Year 6' in school. All of these children had been previously retained. Although more K-only children who had attended socioemotional kindergartens were being retained (10%) than those from academically focused kindergartens (4% being retained), this difference was not statistically significant. The same was true of sex differences in post 'Year 6' retention, with 4% of the K-only girls and 7% of the boys being retained. Unlike their Pre-K/Head Start classmates, moving did not appear to increase the likelihood that K-only children would be retained after 'Year 6.' In fact, the only factor that clearly differentiated ($p < .001$) those who would be retained from those who would not be retained after 'Year 6' was history of prior retention(s).

Grades and post-fourth grade retentions. Fourth grade report cards for children in the 'Class of 2000' who had attended Pre-K/Head Start and who had not been previously retained ($n = 125$) were examined. As shown in Table 35, overall GPA and grades in all subject areas except music were significantly lower for children who were being retained at the end of fourth grade. Because these children had not been retained previously, further exploration of performance during children's pre-primary and primary years was made in an effort to identify a possible basis for the academic difficulties that led to failure in fourth grade.

Pre-K/Head Start children who failed fourth grade had done well in the pre-primary years. As shown in Table 36, there were no significant differences between these children and peers in any subject areas during Pre-K/Head Start ($n = 92$) or kindergarten ($n = 83$). However, by first grade these children had slipped notably in performance and now scored significantly lower than their classmates in all areas (see Table 35, $n = 90$). Because most of their grades were in the 'C' range, with only reading and handwriting appearing to be areas of difficulty, children advanced to second grade. In third grade ($n = 97$, see Table 35) these children received

significantly lower grades in all subject areas except art (p = .09), music (p = .68), and health/PE (p = .44). When advanced to upper elementary, these future retainees had an average GPA that was a full letter grade below their classmates.

Pre-K/Head Start children who would not be retained until after fourth grade had displayed adequate performance earlier in their school careers, although some difficulty with reading was noted in the first grade. However, following first grade both their performance and classroom behavior declined so that by third grade their grades had slipped into the 'D' range for all academically related subjects although they maintained 'mid-C' averages in art, music, and health/PE. Compared to those who were first retained in third grade, children who were not retained until fourth grade did better in math, reading, and language-related subjects in both first and third grade. Although they were somewhat better academically, by third grade their classroom behavior was actually more troublesome than that of classmates who were retained in third grade. Because of the early difficulty in reading and increasing behavior problems, it is possible that children retained for the first time in fourth grade have undetected learning disabilities. None of the first time fourth grade retainees had received special education services during third or fourth grade, although 6.5% of the first time third grade retainees had received some form of special education help during third grade.

Impact on children's development. 'Year 7' Vineland scores for a sample of Pre-K/Head Start children from the 'Class of 2000' who had not been previously retained (n = 93) were examined for the impact of retention after fourth grade. As shown in Table 37, the adaptive behavior of children who had been retained was somewhat lower in all areas measured, with these differences showing a trend towards statistical significance for Composite Adaptive Behavior (p = .12) and Social development (p = .06). While no significant difference in maladaptive behavior scores was found in 'Year 7,' Pre-K/Head Start children retained after fourth grade had a 66% higher average incidence of maladaptive behavior. Further examination of differences between children indicated that, like children who were retained after third grade, development of Pre-K/Head Start children who would be retained after fourth grade had been adequate during the pre-primary grades. As shown in Table 37, during Pre-K/Head Start (n = 92), children who were going to be retained after fourth grade were rated similarly to other children in all developmental areas. In kindergarten (n = 69), children who would be retained after fourth grade had actually surpassed their classmates in all areas except Motor development (see Table 37). These differences were especially apparent in the early superior Communication skills (p = .09) of future retainees.

Predictors of Retention: Regression Analysis

Relationship of retention to dropping out. Retention in grade has consistently been identified as a predictor for dropping out of school. Some research has found future dropout predictors present as early as third grade, with nonpromotion in the first three grades a strong indicator of later dropout. Consequently research focused on early predictors of grade retention is especially important. In this follow-up study it was possible to examine demographic, behavioral, and academic contributors to early grade retention as children reached the critical transition between primary and upper elementary grades. The high dropout rate in the District of Columbia Public Schools makes this information of special preventative value.

Sample. Using regression analysis, a further examination of the 'Class of 2000' was conducted to identify demographic, behavioral, and school related predictors of prior to third grade and after 'Year 5' in school. Data from a total of 138 children enrolled in 63 different schools were included in this analysis. Prior to entering first grade, all children in this analysis had attended both preschool and kindergarten in the District of Columbia Public Schools. The sample used in this regression analysis was 96% African American and 51% female. Most children (79%) qualified for subsidized lunch based upon low family income, and 69% lived in single parent homes. Since these children were first studied, 46% had moved to another school, 24% had been retained prior to third grade, and 11% were to be retained at the end of their fifth year in school.

Analysis variables. Previously collected and current measures were used to predict grade retention prior to or at the end of third grade. These included: (a) academic progress (i.e., CTBS scores, report card grades), (b) children's development (i.e., Vineland Adaptive Behavior scores from Pre-K/Head Start, kindergarten, and first grade), (c) social indicators (i.e., citizenship grades, Vineland Social Development scores), (d) parental involvement during children's first three years of school, (e) type of Pre-K/Head Start and kindergarten experiences, and (f) demographics (i.e., sex, SES, mobility).

Regression models. Table 38 reports correlations and R^2 for predictor variables with significant beta weights for the criterion variables of grade retention prior to third grade and retention following children's fifth year in school. These significant predictor variables were entered into a second stepwise regression analysis with the resulting parsimonious models presented in Table 39 accounting for 44% to 50% of the variance.

Discriminant analyses were then performed, and 91.5% of children were correctly classified on retention status prior to third grade based upon parent involvement during kindergarten and first grade verbal (reading, language, spelling) academic performance. Overall, 85.4% were correctly classified on retention status following their fifth year in school based upon 'Year 5' verbal academic performance.

Data were then analyzed separately for boys and girls with the most parsimonious models presented in Table 40. For girls, discriminant analyses correctly classified 95.8% and 90.8% on retention status prior to, and following 'Year 5' in school, respectively. This successful prediction of pre-third grade retention for girls was based on first grade verbal academic performance and parent involvement in kindergarten. For girls, retention after 'Year 5' in school was best predicted by 'Year 5' verbal academic performance and attendance problems during Pre-K/Head Start. Overall accuracy of prediction for boys was 80% and 89.2% on retention status prior to and following 'Year 5' in school respectively. This prediction of pre-third grade retention for boys was based on their first grade verbal academic performance. For boys, retention after 'Year 5' in school was best predicted by 'Year 5' verbal academic performance.

Implications of prediction. Findings that measures of reading achievement and language skills were such strong predictors of grade retention were of particular value because these same variables have been identified by other researchers as notable predictors of dropout status. These new follow-up data were able to differentiate periods in a child's school career that have the most potential influence on retention decisions. For example, poor verbal performance during first grade was predictive of retention prior to third grade, but not of retention after 'Year 5' in school, although it may have contributed cumulatively to the 'Year 5' deficits in verbal performance found to be predictive of later retention.

The contribution of early parent involvement as an 'inoculator' against retention prior to third grade was another important finding because of its implications for early intervention efforts. Likewise, finding a predictive association between retention after 'Year 5' and notable school attendance problems at age four among girls suggests further avenues for early intervention. Because preschoolers are not responsible for getting themselves to school, this latter finding may also be reflective of parent involvement in children's early schooling. Another explanatory possibility involves preschool health of girls retained at the end of the primary grades. Efforts to curtail early difficulties predictive of nonpromotion in the primary grades could translate into reductions in the DCPS dropout rate.

Summary: School Competence

Special education placement increased after third grade, showing no difference in rate of placement between those who had or had not attended Pre-K/Head Start although prior to third grade more K-only children received special education services. Low parent involvement, moving prior to third grade, and attending an academically-focused kindergarten were associated with an increased likelihood of special education placement. However, in this school system it appears that grade retention is used to deal with early academic difficulties rather than special education referral. Approximately 21% of the children studied were retained prior to third grade, while an additional 8% were retained for the first time in third grade and 3% were first time retainees in fourth grade. By the end of 'Year 6' in school, approximately 32% of DCPS children in this study had been retained at least once, and 5% had experienced multiple grade retentions. With grade retention a known predictor of high school drop out, it is vital to identify and aggressively remediate early predictors of grade retention.

This follow-up study showed that retention affects students differently depending upon timing and students' earlier learning experiences. Among those who enter Pre-K/ Head Start at age four, males and children who move frequently are more likely to be retained. Furthermore, for these children retention was not an effective strategy for remediating academic difficulties that were evident before third grade. Children who were retained prior to third grade had difficulty from the beginning of their school careers, while children who were first retained in third grade did not encounter difficulty until their second year in school, and children first retained in fourth grade did not encounter difficulty until their third year in school. Children who are not retained until fourth grade did somewhat better academically than third grade retainees, but their increasingly troublesome classroom behavior, coupled with early reading problems despite adequate development of other communication skills, suggests the possibility of undetected learning disabilities that will not be alleviated through retention alone.

Among children who first enter school as 5-year-old kindergartners, a different pattern emerges. In this grouping, girls are more likely to be retained before third grade, and retention appears to be a more useful strategy for remediating academic deficits during the primary grades. However, the initially promising benefit of grade retention for K-only children diminishes as children advance in school and prepare to leave the primary grades. Like their Pre-K/ Head Start classmates, K-only children who were retained prior to third grade had difficulty from the beginning of their school careers, while children who were first retained in third grade did not encounter difficulty until their

second year in school. In general, K-only children retained after third grade do better in the subsequent year than those retained prior to third grade. Unlike retained Pre-K/ Head Start children, adaptive behavior of K-only retainees equalled that of nonretained peers and they displayed a lower incidence of maladaptive behavior than K-only classmates who had not been retained.

For children who had attended Pre-K/Head Start, early parent involvement appeared to be a powerful 'inoculator' against retention prior to third grade. Low involvement during kindergarten and difficulty with language-related subjects in first grade were identified as early predictors of retention prior to third grade. Poor performance in language-related subjects during children's fifth year in school was predictive of retention following 'Year 5.' Because of the strong association between retention and future school drop out, efforts to curtail early difficulties predictive of nonpromotion in the primary grades could translate into reductions in the DCPS dropout rate. It is, therefore, imperative that retention policies be reexamined and preventative actions be initiated as soon as potential problems are identified. However, it is also important that such children not be labeled as dropout risks because of the negative consequences of self-fulfilling prophesies.

MALADAPTIVE BEHAVIOR

Maladaptive Behavior was measured for the first time in this follow-up study using the Vineland Adaptive Behavior Scales. The Maladaptive Domain measures undesirable behaviors that may interfere with the individual's adaptive functioning. Part I was used in this study because it measures less severe forms of maladaptive behavior. The 27 behaviors in this domain are scored from (0) no, never occurs to (1) sometimes or partially to (2) yes, usually occurs. Scores can range from 0 to 54. For each child the frequency of behavior is compared with others of the same age in the national standardization sample, and raw scores can be categorized at three levels of maladaptiveness: Nonsignificant (50th percentile or below), Intermediate (51st to 84th percentile), and Significantly Maladapted (85th percentile or above). This scale serves as a screening device to determine the need for further, in-depth observations and evaluation of behavior. Individuals scoring within the Significantly Maladapted range should receive in-depth evaluations.

Incidence of Maladaptive Behavior

Data were available for 202 children who had attended Pre-K/Head Start in a combined sample of the 'Class of 2000' (assessed in 'Year 7') and the 'Class of 2001' (assessed in

'Year 6'). Raw scores for this combined sample ranged from 0 to 52, with a mean score of 8.39 (SD = 9.06), and a median score of 6. While 49% of the children were classified as OK (Nonsignificant), 23% displayed Intermediate levels of maladaptive behavior, and 28% were Significantly Maladapted. Although the difference between cohorts was not statistically significant ($p = .31$), the incidence of maladaptive behaviors in the 'Class of 2001' was 39% higher than found in the 'Class of 2000' (average scores for 2000 and 2001 were 5.95 and 8.27 respectively).

Among K-only children ('Class of 2000,' $n = 41$), raw scores ranged from 0 to 36, with a mean score of 8.90 (SD = 9.06), and a median score of 6. These children were similar to their Pre-K/Head Start classmates, with 49% classified as OK (Nonsignificant), 22% displaying Intermediate levels of maladaptive behavior, and 29% were Significantly Maladapted.

Areas of Difficulty

Total sample. Further examination of behaviors for the entire sample ($n = 243$) indicated that one-third or more of the children displayed some difficultly with the following nine behaviors: (a) is overly dependent, (b) withdraws, (c) avoids school or work, (d) is too impulsive, (e) has poor concentration and attention, (f) is overly active, (g) is negativistic or defiant, (h) shows lack of consideration, and (i) is stubborn or sullen. On the following six behaviors one-quarter or more of the children had some difficulty: (a) bites fingernails, (b) exhibits extreme anxiety, (c) cries or laughs too easily, (d) has temper tantrums, (e) teases or bullies, and (f) lies, cheats, or steals. The lowest incidence of behavior was noted for wets bed (2%), eating disturbance (4%), sleep disturbance (4%), runs away (5%), grinds teeth during day or night (6%), and exhibits tics (8%). Incidence of all other behaviors exceeded 13% of the children, with 79% of the children receiving some score greater than 0 for at least one of the 27 maladaptive behaviors assessed by this scale.

Children with some maladaptive behavior. Specific areas of difficulty for the 192 children who were scored as having at least one maladaptive behavior are presented in Table 41. The two most frequent behaviors scored as usually occurring in these children were: (a) poor concentration and attention (22%), and (b) is stubborn or sullen (17%). The seven behaviors that were most likely to be seen sometimes or partially in these children included: (a) poor concentration and attention (45%), (b) is stubborn or sullen (37%), (c) is overly dependent (36%), (d) withdraws (36%), (e) avoids school or work, (f) is negativistic or defiant (33%), and (g) shows lack of consideration (32%).

Examination of the percentage of boys and girls who displayed each behavior shows a greater incidence of thumb

or finger sucking among girls (34%) than boys (10%). Likewise, more girls (42%) than boys (28%) were biting their fingernails. Somewhat more boys (34%) than girls (26%) had difficulty with lying, cheating, or stealing. The distribution of 'usually' versus 'sometimes' scores were examined for boys and girls using the chi square statistic. There was a statistical trend ($p < .10$) for more boys and fewer girls than expected to be high in the following three behaviors: (a) avoids school or work, (b) teases or bullies, and (c) shows lack of consideration. Significantly more girls and fewer boys than expected exhibited extreme anxiety ($p < .05$).

Related items were combined to form four problem areas. Anxiety-related problems were reflected by items 1-7, 9-11, and item 14. Attention/hyperactivity problems were reflected by items 15-17. Defiant/conduct disorders were reflected by items 18-20, and 22-24. Possible depression was reflected by items 11 and 13. Using these item groups it was possible to estimate the following percentage of children who displayed problems with attention/hyperactivity (51%), defiant/conduct disorder (35%), possible depression (31%), and anxiety (22%). For three of the four problem areas, both sexes were equally affected. However, more boys and fewer girls than expected were high in defiant/conduct disorders ($p < .10$).

Possible Factors Related to Maladaptive Scores

Pre-primary model. Children who attended academically directed Pre-K programs (no Head Start programs were Model AD) showed a 35% to 39% greater incidence of maladaptive behaviors at 'Years 6 and 7' than did children from other Pre-K/Head Start models (Model CI = 7.67, Model M = 7.47, Model AD = 10.37, $p = .12$). This difference was especially pronounced for girls, with the average number of maladaptive behaviors displayed by girls from academically directed Pre-K (8.12) being 97% higher than the average for child-initiated programs (4.12) and 23% higher than Model M programs (6.62). For boys, academically directed children were 10% higher in maladaptive behaviors than boys from child-initiated programs and 49% higher than Model M boys. No significant differences in maladaptive behavior attributable to kindergarten model were found for either Pre-K/Head Start or K-only children.

Sex differences. Overall, among children who had attended Pre-K/Head Start significantly more boys (41%) than girls (21%) were classified as being Significantly Maladapted ($p < .01$), and significantly fewer boys (37%) than girls (57%) were classified as OK or having nonsignificant levels of maladaptive behavior ($p < .01$). A similar pattern was found for K-only children, with more boys (50%) than girls (17%) being classified as

Significantly Maladapted (p = .08) and fewer boys (29%) than girls (61%) classified as being OK (p = .08).

Transiency and attendance. Moving prior to third grade had no noticeable impact on maladaptive behavior for either Pre-K/Head Start or K-only children. The same was true for Pre-K/Head Start children who moved between 'Year 5' and 'Year 6' of school. While all K-only children who moved at that time were classified as having nonsignificant levels of maladaptive behavior, only 45% of those who did not move between 'Years 5 and 6' were OK ($p < .05$). In general, however, moving did not have an adverse impact on maladaptive behavior. Nor did absences from school result in greater maladaptiveness. For Pre-K/Head Start children, no significant differences were found between children with good or poor attendance during Pre-K/Head Start, kindergarten, first grade, or 'Year 5' in school.

Parent involvement. For boys, the incidence of maladaptive behavior was, by 'Year 6' in school, 53% lower among those whose parents had been involved during Pre-K/Head Start (high involvement = 5.53, low = 11.73, p = .10). The overall incidence of maladaptive behavior was 42% lower in children whose parents had been involved during kindergarten (high = 5.22, low= 9.07), and for girls there was a 78% lower incidence of maladaptive behavior in 'Year 6' if parents had been involved during children's second year in school (high = 2.39, low = 10.67). Although the incidence of maladaptive behavior in 'Year 6' was not significantly different for children whose parents were or were not involved during 'Year 5,' those with high involvement had a 40% greater incidence of maladaptiveness (high = 8.89, low = 6.35).

With the exception of first grade involvement, the incidence of maladaptive behavior in 'Year 7' was not as affected by previous parent involvement. No significant difference attributable to parent involvement during Pre-K/Head Start was found, and a nonsignificant difference of 15% lower maladaptive behavior was found for children whose parents had been involved during kindergarten. The incidence of 'Year 7' maladaptive behavior was 59% lower in children whose parents had been involved during first grade (high = 2.56, low = 6.25, p = .09). No difference found in 'Year 7' maladaptive behavior could be attributed to 'Year 6' parent involvement.

Among K-only children, parent involvement had no statistically significant impact on 'Year 7' maladaptive behavior. However, the overall incidence of 'Year 7' maladaptive behavior was 34% lower for those whose parents had been involved during kindergarten (high = 7.96, low = 12.04). First grade involvement had no relationship to later maladaptive scores (high = 6.06, low = 6.30). Those with high 'Year 6' involvement displayed 24% more

maladaptive behavior in 'Year 7' (high = 10.16, low = 8.21).

Retention. Although retention, in general, did not have a statistically significant impact on maladaptive classification of children who had attended Pre-K/Head Start, some detrimental patterns were evident. Overall, 7% more children who were retained before third grade were rated as Intermediate in maladaptiveness compared to those who had not been retained. Pre-K/Head Start children in the 'Class of 2000' were even more affected by retention, with 46% of those retained prior to third grade versus only 25% of nonretained being classified as Significantly Maladapted. Overall, children who were retained after third grade displayed a 25% higher incidence of maladaptive behavior in 'Years 6 and 7.' Among children retained after 'Year 5' in school, 42% displayed signs of being Significantly Maladapted while only 28% of the nonretained fell within that category. Children retained for the first time after fourth grade had a 66% higher average incidence of maladaptive behavior, and fewer children retained after 'Year 6' in school were classified as OK (33%) compared to 50% of the children who were not retained after fourth grade.

For K-only children, retention did not have a negative impact on maladaptive behavior. Unlike retained Pre-K/Head Start children, K-only retainees displayed a lower incidence of maladaptive behavior than K-only classmates who had not been retained. In fact, none of the K-only children who were retained prior to third grade were found to be Significantly Maladapted at 'Year 7,' while 37% of those who had not been retained fell within this category. K-only children who had been retained prior to third grade showed 48% less maladaptive behavior than peers ($p = .10$). Maladaptive behavior scores were also 25% lower in K-only children who were retained for the first time after third grade. No K-only children in this sample were retained for the first time after fourth grade.

School Achievement and Maladaptive Behavior

Grades: Children who attended Pre-K/Head Start. As shown in Table 42, Pre-K/Head Start grades for a combined sample of the 'Classes of 2000 and 2001' ($n = 130$) were not statistically different. In fact, children who would later be classified as Significantly Maladapted actually showed the greatest progress towards mastery of all early skills except physical development. However, by kindergarten ($n = 91$) these same children were now making less progress than peers (see Table 42), with especially lower grades found for early social skills/work habits ($p < .05$).

By first grade ('Class of 2000,' $n = 68$), future Significantly Maladapted children earned the lowest grades in all subject areas except health/PE (see Table 43). Their

grades were significantly lower for overall GPA ($p < .01$), math ($p < .01$), reading ($p = .08$), language ($p < .05$), handwriting ($p < .05$), and citizenship ($p < .001$). Table 43 also shows that, by 'Year 5' in school ('Classes of 2000 and 2001', $n = 154$), future Significantly Maladapted Pre-K/Head Start children were lower than classmates in all subjects except science, and these differences were statistically significant for overall GPA ($p < .001$), with all subject areas except science showing a trend towards statistical significance ($p = .07$). 'Year 6' grades ('Class of 2000,' $n = 86$) were lower in all subject areas for Pre-K/Head Start children who were Significantly Maladapted, and these differences (see Table 43) were statistically significant for all areas except music and health/PE, where performance of children with Intermediate levels of maladaptiveness exceeded that of their classmates.

Grades: K-only children. Among K-only children, those who would later be classified as Intermediate in Maladaptive Behavior were found to have the most difficulty earlier in their school careers. During kindergarten ('Class of 2000,' $n = 22$), these children had the lowest kindergarten grades, while K-only children who would later be classified as Significantly Maladapted showed the greatest mastery of early skills (see Table 42). Differences in kindergarten social skills/work habits showed a trend towards statistical significance ($p = .07$).

This pattern of differences continued in first grade ('Class of 2000,' $n = 25$), with the future Intermediate Maladapted receiving the lowest grades in all subject areas and future Significantly Maladapted K-only children receiving the highest grades in all subjects except language, handwriting, art, music, and citizenship (see Table 43). These differences were statistically significant for overall GPA ($p < .05$), social studies ($p < .01$), science ($p < .05$), art ($p < .05$), and citizenship ($p < .01$). A trend towards significance was found for handwriting ($p = .12$).

However, by 'Year 5' in school ('Class of 2000,' $n = 27$) future Significantly Maladapted K-only children were now receiving lower grades in all subject areas except handwriting and art, while those with future Intermediate levels of maladapted behavior showed improvements over previous years, especially in classroom behavior as measured by citizenship grades (see Table 43). In fact, only differences in citizenship grades approached statistical significance ($p = .08$). The same basic pattern was found for 'Year 6' grades of K-only children ('Class of 2000,' $n = 33$), in which case children who would be classified as Significantly Maladapted in 'Year 7' were lower in all subjects except health/PE. These differences (see Table 43) were statistically significant for citizenship ($p < .01$),

with a trend towards significance noted for grades in social studies (p = .09).

Standardized achievement test scores. Third grade CTBS scores for Pre-K/Head Start children who had not been previously retained ('Classes of 2000 and 2001,' n = 106) were examined for any indication that future differences in maladaptive behavior may have been apparent in earlier objective measures of achievement (see Table 44). In all areas measured except math, there was a decreasing progression of scores associated with an increase in future maladaptive behavior. This progression was statistically significant for total battery scores (p < .01), as well as all other areas measured except word recognition (p = .35), spelling (p = .07), language expression (p = .08), and science (p = .30). In math computation, future Significantly Maladapted children had surpassed future Intermediate Maladapted children, while the reverse was true for math concepts. In either case the Pre-K/Head Start children who would later be classified as OK (nonsignificant levels of maladaptation) had scored the highest.

Third grade CTBS scores for "on schedule" K-only children ('Class of 2001,' n = 16) were examined for any indication that future differences in maladaptive behavior had been evident in earlier objective measures of achievement (see Table 44). In all areas except spelling, language expression, science, and social studies there was a decreasing progression of scores associated with an increase in future maladaptive behavior. However, unlike the progression found among Pre-K/Head Start children, the gap between future OK and Intermediate Maladapted K-only children was not as evident on this measure of school achievement. What was apparent was the notably lower scores of future Significantly Maladapted K-only children. None of these differences were statistically significant due to the small sample size, although a trend towards significance was found for reading vocabulary (p = .13) and language mechanics (p = .10).

Development and Maladaptive Behavior

As shown in Table 45, with the exception of the Social domain (p = .09), no significant differences between children ('Classes of 2000 and 2001,' n = 129) were found during Pre-K/Head Start, children's first year in school. However, by kindergarten ('Classes of 2000 and 2001,' n = 82) more differences emerged (see Table 45) in which future Significantly Maladapted Pre-K/Head Start children were lower in other areas of development, most notably Daily Living skills (p < .05). By 'Years 6 and 7' Pre-K/Head Start children in this combined sample of the 'Classes of 2000 and 2001' (n = 170, see Table 45) showed a significant decreasing progression of scores in all Vineland domains

associated with increases in maladaptive behavior ($p < .001$).

During K-only children's first year in school ('Class of 2000,' $n = 19$), children who would later be classified as Significantly Maladapted were actually higher in overall Composite Adaptive Behavior, Communication ($p = .07$), and Daily Living skills than classmates (see Table 45). However, both future Intermediate and Significantly Maladapted K-only children showed early deficiencies in Social development ($p = .09$). By 'Year 6' K-only children ('Class of 2000,' $n = 36$) showed the familiar decreasing progression of scores in all Vineland domains associated with increases in maladaptive behavior, with these differences being statistically significant for all areas except Daily Living skills.

Early Language Deficits and Maladaptive Behavior

Language delays and behavior problems. Previous researchers have found an increased prevalence of psychiatric disorders among language-delayed children, and parents of language-delayed children report higher levels of behavior difficulties in their children. While the directional nature of this relationship is unclear, it has been suggested that behavior problems might be the symptom of language impairment rather than its cause. Some have concluded that language factors may play a more direct role in development of children's psychiatric disorders than previously hypothesized. While delays in both receptive (comprehension) and expressive (production) language are more notable in children with diagnosable psychiatric disorders, receptive delays rarely occur in the absence of socialization problems. Although poor receptive skills may not be apparent if children use nonlinguistic strategies to mask comprehension deficits, receptive ability may actually be a better predictor of adaptive skill than IQ or expressive ability.

In this follow-up study of DCPS children, both receptive and expressive language were examined as precursors of maladaptive behavior. This possible relationship was of special interest because previous research found non-Caucasian, language-disordered children from single-parent homes to be at-increased-risk for development of psychiatric disorders.

Sample. Included in this examination of the relationship between early language deficits and subsequent maladaptive behavior were 202 Pre-K/Head Start children from the 'Classes of 2000 and 2001' whose average age was 124.8 months. The sample was 98% African American and 54% female. Most children (77%) qualified for subsidized lunch based upon low family income, and 69% lived in single parent homes.

Analysis variables. Children's current 'Year 6' or 'Year 7' development was compared with the following previously collected measures: Pre-K/Head Start and kindergarten Vineland scores, Pre-K/Head Start and kindergarten progress reports, and 'Year 5' CTBS standardized achievement test scores and progress reports. Analyses focused on the relationship between language-related data and current levels of adaptive/maladaptive functioning. All data were analyzed using a covariate to control for possible economic differences (subsidized versus nonsubsidized lunch) between children.

Earlier Vineland scores. Earlier measures of receptive language development indicated no significant differences between maladaptive categories had existed during Pre-K/Head Start. By kindergarten, more future Significantly Maladapted children than expected were low in receptive skills ($p < .01$). No significant differences in expressive skills were found in either Pre-K/Head Start or kindergarten. Only future Significantly Maladapted children showed a significant drop in Communication skills from Pre-K/Head Start to 'Year 6' or 'Year 7' in school ($p < .001$), and the greatest decreases in communication skills since kindergarten ($p < .01$).

Earlier school grades. A decrease from Pre-K/Head Start to kindergarten in pre-reading ($p = .06$) and listening skills ($p < .05$) was found for future Significantly Maladapted children only. Children with nonsignificant levels of maladaptation (OK) had maintained expected progress in reading and language-related grades from Pre-K/Head Start or kindergarten to 'Year 5.' Future Intermediate Maladapted children had lower than expected 'Year 5' spelling grades related to lower listening skills in Pre-K/Head Start ($p = .09$) and kindergarten ($p < .01$). By 'Year 5,' Significantly Maladapted children had made less progress than expected, and were lower in reading ($p < .01$), language ($p < .05$), and spelling ($p < .01$).

Earlier language-related test scores. No significant differences between OK, Intermediate, and Significantly Maladapted children were found for language expression in 'Year 5' CTBS scores. However, future Significantly Maladapted children scored lower than others in standardized achievement measures of total reading ($p = .10$), reading comprehension ($p = .06$), total language ($p < .05$), spelling ($p = .10$), and language mechanics ($p < .01$).

Predicting maladaptive behavior. Language-related measures from each school year were entered into separate stepwise regression analyses. No significant predictors were found at the Pre-K/Head Start level. Kindergarten receptive skills, 'Year 5' CTBS language mechanics scores, and current receptive skills accounted for 7.2%, 8.5%, and 13.3% of the variance in maladaptive classifications

respectively. When these three variables were entered into a final stepwise regression, only kindergarten receptive skills added significantly to the predictive value of current receptive skills (R^2 change = .064, $p < .01$, cumulative R^2 = .197). Discriminate analysis indicated kindergarten receptive skills were the best measure for successfully categorizing 78% of future Significantly Maladapted children.

Implications of this relationship. Deficits in early receptive, but not expressive, language skills were related to later behavioral difficulties of children in this study. The appearance of receptive deficits during kindergarten suggests that children may have successfully masked deficits in Pre-K/Head Start through nonlinguistic strategies. However, those strategies would not be adaptive when confronted with the academic demands of this school system's kindergarten curriculum. Although deficits in receptive skills accounted for less than 20% of the variance in maladaptive behavior, early intervention in the speech and language area may prevent development of more severe behavioral disorders in these especially high risk children. These current data support Baker and Cantwell's preliminary conclusions (1987, p. 509) that "in some cases, speech and language therapy may be sufficient intervention to prevent or ameliorate behavioral problems; in other cases, it may not."

Summary: Maladaptive Behavior

The incidence of maladaptive behavior found in this sample of children was high, with the majority of children showing intermediate or significant levels of difficulty at this point in time. The most common problem reported by teachers was attention deficits/hyperactivity. Anxiety, possible depression, and conduct disorders were also frequently observed. Such behaviors are often concomitants of learning disabilities. Boys showed more severe levels of maladaptiveness than did girls. Children who had attended academically directed pre-kindergartens had the highest incidence of maladaptive behavior. Parent involvement in the earlier grades, especially kindergarten, was associated with lower maladaptiveness later in children's school careers.

For children who entered school at age four, the incidence of maladaptive behavior was notably higher among those who had been retained. Retention did not have the same negative impact on behavior of children who began school as kindergartners. Children who would later be classified as Significantly Maladapted showed no deficits during their first year in school. However, deficits associated with the most severe future maladaptiveness surfaced much earlier for Pre-K/Head Start children than for K-only children. By third grade, standardized achievement

test scores showed a decreasing progression associated with increases in future maladaptive behavior. Finally, early deficits in receptive language were linked to later behavioral difficulties.

The incidence of maladaptive behavior is alarming, although predictable given the previously overly-academic focus of these children's earliest learning experiences. As has been found by other researchers, early learning experiences that are highly didactic in nature are associated with later behavioral difficulties during adolescence. This relationship is especially strong for boys. For DCPS children this detrimental impact has surfaced before adolescence, and is readily apparent in 9- and 10-year-old children. While some of these behaviors may reflect undetected learning disabilities, not all maladaptive behavior found in DCPS children can be attributed solely to school-related factors. In particular, the source of children's high anxiety and depressed behaviors may be community or home based.

Regardless of the source, however, these undesirable behaviors are clearly interfering with children's adaptive functioning, both developmentally and academically. Therefore, it is imperative that schools alter whatever is within their power to alter (i.e., teaching strategies, continuous progress/ungraded primary, detection of learning disabilities and receptive language deficits), and also address community-based concerns children bring with them to school. In this latter area, elementary school counselors could be the key. School-based counseling intervention at the classroom and small group level would help children express and better cope with the basis for their anxiety and possible depression. Peer-counselors could be trained to provide further help and support. School-wide (re)training in effective behavioral strategies for administrators, faculty, and staff would be useful. Community outreach programs could be established or expanded to provide families with strategies and alternatives for handling children's maladaptive behaviors. While schools cannot directly change communities, schools can alleviate some of the affective components of the broader environment which interfere with children's adaptive functioning.

The first step would involve a school-wide needs assessment and in-depth psychoeducational evaluation of children classified as Significantly Maladapted. If learning disabilities are the cause of the maladaptiveness, educational intervention is recommended along with individual counseling. If a receptive language deficit is the source of difficulty, speech and language therapy along with activity group counseling is needed. Finally, if the maladaptive behavior is not rooted in educational or language-related difficulties, child and famil counseling, along with teacher training for management of the specific

problem would be advised. Because it will take time to perform the type of in-depth evaluation needed to differentiate sources of maladaptive behavior, and the majority of DCPS children display behaviors that interfere with current functioning, school-wide counseling at the classroom level should be instituted on a weekly or biweekly basis. The high level of maladaptive behavior is one of the most serious problems identified in this follow-up study. It is a problem which must be dealt with swiftly and thoroughly, for failure to do so now only postpones the inevitable consequences at the next transitional point in children's school careers.

CONCLUSIONS

This follow-up study of children in the District of Columbia Public Schools provides useful information for policy makers. It is now clear that reforms initiated in the District's early learning programs beginning in 1990 will help large numbers of children as they enter and move through the public schools of Washington, D.C. In fact, most children in the two cohorts studied are making generally good progress as measured by school grades, standardized achievement tests, and developmental measures. The only notable exceptions to such indicators of progress are an unusually high rate of grade retention and a disturbingly high rate of maladaptive behavior. Because both of these concerns have important implications for the school and the community-at-large, further reforms are still needed. Fortunately, examination of longitudinal data collected since children were 4-years-old shows us what does or does not work with these children, and makes identification of needed reforms easier. Implementation of needed changes is more difficult, but not impossible given policy makers' rapid and productive response to earlier study recommendations.

Models of Early Childhood Education

Earlier efforts to shift the focus of pre-kindergarten away from teacher-directed academics to child-initiated, active learning are well worth it. The negative impact on achievement and social development of overly academic early childhood programs was clearly apparent by age nine in this sample of DCPS children. By fourth grade children who had attended academically-directed Pre-K programs were earning noticeably lower grades and passing fewer fourth grade reading and mathematics objectives, despite adequate performance on third grade standardized achievement tests. By fourth and fifth grades, children from academic Pre-K programs were developmentally behind peers and displayed notably higher levels of maladaptive behavior.

More efforts to reform kindergarten are needed. The findings are clear. Socioemotional kindergarten experiences

have a long-lasting, positive impact on children's academic and developmental competence. This effect is most noticeable during children's first year in the upper elementary grades, although among boys who participated in Pre-K/Head Start, the socioemotional kindergarten experience was associated with greater school success and enhanced development throughout their school careers. There is no advantage in keeping kindergarten as a 'junior' version of first grade. There is, however, a real benefit from returning the kindergarten experience to the preparatory role it once held. Socioemotional development is a legitimate goal of early learning experiences, and making kindergarten developmentally appropriate should be a central curricular and instructional priority. The consequences of failing to do so are unacceptable, especially for boys in this urban school system.

Transition to Upper Elementary

Overly academic early learning experiences impact negatively on children's ability to successfully transition from the primary grades to upper elementary. Children whose first school experience is an academically-focused kindergarten have more difficulty making the transition. The long-term positive effects of a more active, child-initiated early learning experience show up between the fifth and sixth year of school for children who begin school at age four.

Children whose first school experience is an academically-directed preschool show the greatest decline in school grades between first and fourth grade. Although less consistent, there is also some indication that children whose first school experience is an academically-focused kindergarten also make less progress by fourth grade than do children whose first school experience is more socioemotional in nature. Patterns of developmental change from pre-primary to primary and upper elementary grades are more difficult to identify, although children with overly academic preschool experiences had not advanced as rapidly in social development.

Thus, consistent with findings on the long-term affects of different models, children's academic and developmental progress through school is enhanced by more active, child-initiated early learning experiences. Their progress is slowed by the 'escalated curriculum' which introduces formal learning experiences too early for most children's developmental status.

School Competence

Because intellectual and achievement gains associated with early intervention typically fade by third grade, researchers have focused on other indicators of success such

as lower retention rates and reduced special education placement. Interestingly, among "on schedule" DCPS children who had not been previously retained, the effects of Pre-K/Head Start did not fade by third grade. With the exception of poorer performance by children who had attended academically-directed Pre-K, third and fourth grade children who had attended Pre-K/Head Start maintained their earlier advantage over classmates who had not attended Pre-K/Head Start. Unfortunately, this promising finding did not apply to children who had been retained prior to third grade. Whereas "on schedule" children are successful in making the transition from 'Year 5' to 'Year 6' of school, others appear to need additional help to avoid loosing the earlier gains associated with Pre-K/Head Start attendance.

Special education placement increased after third grade, showing no difference in rate of placement between those who had or had not attended Pre-K/Head Start although prior to third grade more K-only children received special education services. However, in this school system it appears that grade retention is used to deal with early academic difficulties rather than special education referral. By the end of 'Year 6' in school, approximately one-third of the children in this study had been retained at least once, and 5% had experienced multiple grade retentions. With grade retention a known predictor of high school drop out, it is vital to identify and aggressively remediate early predictors of grade retention.

Efforts to curtail early difficulties predictive of nonpromotion in the primary grades could translate into reductions in the DCPS dropout rate. For children who had attended Pre-K/Head Start, early parent involvement appeared to be a powerful 'inoculator' against retention prior to third grade. Low involvement during kindergarten and difficulty with language-related subjects in first grade were identified as early predictors of retention prior to third grade. Poor performance in language-related subjects during children's fifth year in school was predictive of retention following 'Year 5.' It is, therefore, imperative that retention policies be re-examined and preventative actions be initiated as soon as potential problems are identified. However, it is also important that such children not be labeled as dropout risks because of the negative consequences of self-fulfilling prophesies.

Thus, continuous progress/ungraded primary appears to be a viable alternative to retention. For K-only children, retention after third grade is more productive than retention prior to third grade. For Pre-K/Head Start children, retention at any time does not appear to be an effective strategy for remediating academic differences that were evident before third grade. Furthermore, retention after fourth grade is inappropriate if the source of

children's troublesome classroom behavior and early reading problems is an undetected learning disability.

Risk Factors

Various risk factors related to children's sex, poor attendance, family transiency, low parent involvement, language deficits, and early learning model were identified. An increased likelihood of special education placement was associated with low parent involvement, moving prior to third grade, and attending an academically-focused kindergarten. Pre-K/Head Start boys and K-only girls were the most likely to be retained before third grade. For Pre-K/Head Start children, frequent moves were also associated with a higher retention rate throughout their school careers.

Difficulty in making the transition from the primary grades to upper elementary was associated with overly academic early learning experiences, moving after first grade, and attendance problems during children's first year in school. It is possible that whatever factors affect children's initial transition to school reappear at the next crucial period of transition in their educational careers. Thus, children who change school after first grade and/or who have excessive absences during their first year of school will need more help adjusting to their new school experiences. The anticipated result of such early intervention would be reduced transitional difficulties of children upon leaving the primary grades.

Some reduction in later maladaptive behavior could also be expected if receptive language deficits were identified and remediated earlier. Screening all kindergartners for receptive language delays and subsequent therapeutic intervention is an especially important preventative action.

Parent involvement has an important and enduring impact on children's progress in school. Involvement during Pre-K/Head Start appears to have an enduring positive affect on children's behavior in the classroom. Parent involvement also affects children's grades and performance on standardized achievement tests, with involvement during children's second year in school being especially critical for later school success. Parent involvement was easier to predict for children who had attended Pre-K/Head Start, with Head Start parents the most likely to be involved early in their children's school careers. Involvement during kindergarten was the most critical predictor of future involvement, although academically-focused kindergarten programs were less likely to encourage parent involvement.

The impact of parent involvement on school competence, academic achievement, and children's development is especially noteworthy because none of the types of parent involvement examined in this study required large amounts of time, yet the results are remarkable and enduring. Failing to fulfill even the most minimal expression of parent involvement represents a clear danger to children's future school success. Because involvement during kindergarten is especially critical, and the developmental appropriateness of kindergarten programs affects parent involvement, returning kindergarten to the preparatory role it once held is essential.

Maladaptive Behavior

In 1990 a strong warning about children's social development was made based upon research findings of deficits in social development and the anticipated impact of such deficits on later school performance. It was feared that early learning programs which chose to foster cognitive development over social, affective, and motor development would lead to later difficulties.

Unfortunately, just four years later this cautionary warning has become a reality with the majority of children showing intermediate or significant levels of maladaptive behavior. The most common problem reported by teachers was attention deficits/hyperactivity. Anxiety, possible depression, and conduct disorders were also frequently observed. Such behaviors are often concomitants of learning disabilities. Boys showed more severe levels of maladaptiveness than did girls. Children who had attended academically-directed Pre-K had the highest incidence of maladaptive behavior. Parent involvement in the earlier grades, especially kindergarten, was associated with lower maladaptiveness later in children's school careers. For children who entered school at age four, the incidence of maladaptive behavior was notably higher among those who had been retained. Deficits associated with the most severe problems surfaced much earlier for Pre-K/Head Start children than for K-only children. These deficits were interfering with children's adaptive functioning.

The incidence of maladaptive behavior is alarming, although predictable given the previously overly-academic focus of these children's earliest learning experiences. As has been found by other researchers, early learning experiences that are highly didactic in nature are associated with later behavioral difficulties during adolescence, especially for boys. For DCPS children this detrimental impact has surfaced before adolescence, and is readily apparent in 9- and 10-year-old children. While some of these behaviors may reflect undetected learning disabilities, not all of these maladaptive behaviors can be

attributed solely to school-related factors. In particular, the source of children's high anxiety and depressed behaviors may be community- or home-based.

Regardless of the source, however, these undesirable behaviors are clearly interfering with children's adaptive functioning, both developmentally and academically. Therefore, it is imperative that schools alter whatever contributing factors that are within their power to alter, and also address community-based factors which children bring with them to school. The unacceptably high level of maladaptive behavior is one of the most serious problems identified in this follow-up study. It is a problem which must be dealt with swiftly and thoroughly, for failure to do so now only postpones the inevitable consequences at the next transitional point in children's school careers.

RECOMMENDATIONS

1. Re-establish kindergarten as a preparatory learning experience distinctly different from its current function as a 'junior' first grade by:

   a. emphasizing the importance of socioemotional development for later academic success and fostering educational practices that develop the entire child

   b. providing developmentally appropriate learning opportunities that consider children's individual needs and developmental status before formal learning activities are introduced

   c. requiring kindergarten teachers to be certified in early childhood education or to have comparable training in child development relevant to the needs of 5-year-old children

2. Re-examine current policy regarding retention in the primary grades. Expand continuous progress/ungraded primary programs as a viable alternative to retention. Initiate preventative actions as soon as potential problems appear that may be predictive of future retention, paying special attention to progress of Pre-K/Head Start boys and K-only girls.

3. Provide swift intervention for factors which place children at-increased-risk for future academic, developmental, and/or behavioral deficits by:

   a. screening all kindergartners for receptive language deficits and remediating as needed

b. intensifying remediation efforts for children who show signs of difficulty with language-related subjects in the first grade

c. welcoming true parent involvement using strategies that have been effective with Head Start parents to foster meaningful parent involvement, with especially diligent intervention during the kindergarten year for parents who fail to become even minimally involved with children's education

d. interceding (medically and/or through attendance counselors or school social workers) on behalf of children who have excessive absences during their first year in school (Pre-K/Head Start for those who enter at age 4, kindergarten for those who begin school at age 5)

e. assisting children who change schools after first grade to better adjust to their new school experiences

4. Formalize transition policies to assist children and families as children first enter school and at each successive transitional period in children's school careers (i.e., pre-primary to primary, primary to upper elementary/middle school, upper elementary/middle school to junior high, junior high to senior high school). Policies should include plans for:

a. assuring continuity of program

b. facilitating communication between sending and receiving facilities or programs

c. fostering cooperative planning between all staff who are responsible for children's progress at each successive level of schooling (e.g., the primary unit)

c. providing opportunities for children and families to visit and become familiar with the new setting, staff, and expectations before children are actually required to leave one milieu for another

d. monitoring children's successes and/or difficulties during the transition so that additional help can be received in order to sustain earlier progress

5. Institute comprehensive counseling/psychological services at the elementary school level to deal with the alarmingly high incidence of undesirable behaviors currently interfering with children's adaptive functioning. Because the elementary school counselor

is pivotal in implementing this recommendation, schools must be staffed with professionals and/or community paraprofessionals who are proficient in a wide range of services. These services should include, but are not limited to:

a. conducting a needs assessment at each elementary school to identify specific concerns or problems of children at that site so that intervention programs can be tailored to best meet the needs of children

b. screening for maladaptive behavior so that children who are classified as significantly maladapted can receive in-depth psychoeducational evaluation

c. updating administrators, faculty, and staff in effective behavioral strategies for use with inattentive, active, and possibly defiant children (i.e., consultation, conducting workshops, and providing individual guidance in how to implement specific strategies)

d. school-wide counseling at the classroom and small group level to help all children express and better cope with the basis for their anxiety and possible depression

e. training of peer counselors to provide further help and support for classmates

f. establishing community outreach programs to provide families with strategies and alternatives for handling children's maladaptive behaviors

6. Re-evaluate the progress of children in this study as they move through the school system so that long-term effectiveness of different early learning models can be further examined and additional predictors of academic and developmental progress can be identified. Evaluations at the two remaining points of transition (junior and senior high school) would be helpful for identifying factors that contribute to children's overall school competence.

TABLES 1 - 45

Table 1

General Indicators of Children's Progress

	'Class of 2000'			'Class of 2001'	
	Year 5	Year 6	Year 7	Year 5	Year 6
% in Special Education	1%	10%		4%	
% Previously Retained	23%	30%		16%	
% Being Retained at End of Year	16%	8%		11%	
% Moved	44%			42%	
M Absences (days)	9.4	9.2		9.1	
% in Correct Math Level	69%	70%		75%	
% in Correct Reading Level	68%	69%		74%	
GPA	2.54	2.50		2.55	
Citizenship	2.48	2.51		2.34	
CTBS Scores (percentile)					
Total Battery	60th			54th	
Reading	55th			48th	
Language	59th			53rd	
Math	61st			59th	
Science	58th			57th	
Social Studies	57th			48th	
Vineland Scores					
Composite			100.29		101.78
Communication			94.64		95.40
Daily Living			104.01		104.91
Social			102.28		102.68
Maladaptive			8.57		8.32
% Maladapted			53%		49%

Table 2

Impact of Pre-K/Head Start Attendance on 'Year 5' Progress Report Scores

	All Children	"On Schedule" 3rd Graders
Overall G.P.A.		
Pre-K/Head Start	2.57	2.78
K-only	2.55	2.60
Subareas		
Math		
Pre-K/Head Start	2.26	2.53
K-only	2.18	2.32
Reading		
Pre-K/Head Start	2.59	2.79
K-only	2.55	2.74
Language		
Pre-K/Head Start	2.74	2.84
K-only	2.60	2.74
Spelling		
Pre-K/Head Start	2.49	3.10
K-only	2.55	2.79
Handwriting		
Pre-K/Head Start	2.60	2.89
K-only	2.64	2.44
Social Studies		
Pre-K/Head Start	2.60	2.89
K-only	2.64	2.84
Science		
Pre-K/Head Start	2.52	2.63
K-only	2.56	2.63
Art		
Pre-K/Head Start	2.72	2.80
K-only	2.74	2.60
Music		
Pre-K/Head Start	2.77	2.69
K-only	2.69	2.69
Health/P.E.		
Pre-K/Head Start	2.80	3.00
K-only	2.80	2.64
Citizenship		
Pre-K/Head Start	2.62	2.53
K-only	2.40	2.16

Table 3

Impact of Pre-K/Head Start Attendance on 'Year 6' Progress Report Scores

	All Children	"On Schedule" 4th Graders
Overall G.P.A.		
Pre-K/Head Start	2.44	2.69
K-only	2.56	2.52
Subareas		
Math		
Pre-K/Head Start	2.10	2.41
K-only	2.32	2.22
Reading		
Pre-K/Head Start	2.16	2.46
K-only	2.28	2.27
Language		
Pre-K/Head Start	2.22	2.50
K-only	2.34	2.30
Spelling		
Pre-K/Head Start	2.41	2.90
K-only	2.42	2.35
Handwriting		
Pre-K/Head Start	2.52	2.70
K-only	2.43	2.32
Social Studies		
Pre-K/Head Start	2.31	2.56
K-only	2.28	2.18
Science		
Pre-K/Head Start	2.47	2.69
K-only	2.40	2.38
Art		
Pre-K/Head Start	2.82	2.94
K-only	2.98	2.97
Music		
Pre-K/Head Start	2.82	3.03
K-only	2.82	2.87
Health/P.E.		
Pre-K/Head Start	2.92	3.06
K-only	3.12	3.18
Citizenship		
Pre-K/Head Start	2.26	2.74
K-only	2.38	2.42

Table 4
Impact of Pre-K/Head Start Attendance on 3rd Grade CTBS Scores

	"On Schedule" 3rd Graders (Standard Score Units: M = 50, SD = 10)
Total Battery	
Pre-K/Head Start	57.34
K-only	53.55
Total Reading	
Pre-K/Head Start	52.41
K-only	48.45
Word Attack Skills	
Pre-K/Head Start	55.34
K-only	51.48
Vocabulary	
Pre-K/Head Start	54.48
K-only	50.72
Comprehension	
Pre-K/Head Start	49.93
K-only	46.28
Total Language	
Pre-K/Head Start	57.89
K-only	53.96
Spelling	
Pre-K/Head Start	60.10
K-only	57.34
Language Mechanics	
Pre-K/Head Start	62.62
K-only	57.45
Language Expression	
Pre-K/Head Start	52.62
K-only	50.83
Total Mathematics	
Pre-K/Head Start	57.76
K-only	57.00
Math Computation	
Pre-K/Head Start	59.62
K-only	57.00
Math Concepts & Application	
Pre-K/Head Start	54.31
K-only	56.31
Science	
Pre-K/Head Start	50.81
K-only	54.55
Social Studies	
Pre-K/Head Start	50.92
K-only	51.00

Table 5

Impact of Pre-K/Head Start Attendance on 'Year 7' Vineland Scores

	All Children	"On Schedule" 5th Graders
Composite Score		
Adaptive Behavior		
Pre-K/Head Start	99.58	108.50
K-only	101.86	102.11
Domain Scores		
Communication		
Pre-K/Head Start	91.32	100.84
K-only	96.76	95.84
Daily Living Skills		
Pre-K/Head Start	103.83	110.11
K-only	104.94	106.06
Social Development		
Pre-K/Head Start	103.71	110.06
K-only	103.31	104.28
Maladaptive Behavior		
Pre-K/Head Start	7.16	7.86
K-only	8.53	8.36

Note. For Maladaptive Behavior, a higher score indicates greater maladaptation. For Composite score and all other domains, a higher score indicates greater development.

Table 6

Impact of Pre-K/Head Start Model on 'Year 6' Progress Report Scores

	All Children			"On Schedule" 4th Graders		
Model	CI	M	AD	CI	M	AD
Overall G.P.A.	2.59	2.44	2.25	2.86	2.93	2.52
Subareas						
Math	2.30	2.19	1.86	2.62	2.84	2.19
Reading	2.36	2.12	2.00	2.73	2.74	2.39
Language	2.32	2.33	2.10	2.63	2.84	2.32
Spelling	2.53	2.41	2.20	3.02	3.09	2.52
Handwriting	2.60	2.36	2.38	2.85	2.69	2.71
Social Studies	2.41	2.48	2.08	2.70	3.10	2.32
Science	2.58	2.58	2.28	2.89	3.04	2.57
Art	2.90	2.72	2.57	3.09	2.98	2.82
Music	2.79	2.68	2.65	2.84	3.08	2.94
Health/P.E.	3.18	2.92	2.52	3.32	3.19	2.89
Citizenship	2.60	2.35	2.19	2.89	2.99	2.67

Table 7

Impact of Pre-K/Head Start & Kindergarten Model on 3rd Grade CTBS Scores

	Pre-K/Head Start Model			Kindergarten Model	
	CI	M	AD	ModAcK/SE	ModAcK
Total Battery	54.03	59.24	55.84	59.25	55.29
Total Reading	51.50	52.32	50.67	53.70	50.89
Word Attack Skills	54.53	55.46	56.17	58.58	54.77
Vocabulary	52.92	54.09	51.59	56.26	53.04
Comprehension	49.17	50.64	49.77	51.35	48.55
Total Language	50.63	58.24	57.58	58.52	55.21
Spelling	51.84	57.60	54.47	59.70	55.16
Language Mechanics	54.01	61.62	60.78	64.79	57.96
Language Expression	46.84	54.08	53.75	53.19	51.46
Total Mathematics	56.50	64.40	55.64	61.26	56.92
Math Computation	56.19	63.10	57.35	62.26	56.86
Math Concepts and Application	55.19	62.37	53.64	59.52	54.68
Science	53.61	62.25	52.95	61.02	54.33
Social Studies	50.31	59.33	51.72	59.87	51.72

Note. Scores are expressed in standard score units with $M = 50$ and $SD = 10$.

Table 8

Impact of Pre-K/Head Start & Kindergarten Model on Combined 'Year 6' and 'Year 7' Vineland Scores

	Pre-K/Head Start Model			Kindergarten Model	
	CI	M	AD	ModAcK/SE	ModAcK
Composite Score					
Adaptive Behavior	99.12	104.38	97.36	105.91	101.17
Domain Scores					
Communication	94.68	96.39	92.35	98.58	94.35
Daily Living Skills	103.23	106.30	102.12	106.83	102.76
Social Development	99.34	106.94	98.75	106.83	102.76
Maladaptive Behavior	7.67	7.47	10.37	8.28	7.64

Note. For Maladaptive Behavior, a higher score indicates greater maladaptation. For Composite score and all other domains, a higher score indicates greater development.

Table 9
Impact of Kindergarten Model on 'Year 5' Progress Report Scores of Children who Attended Pre-K/Head Start

	All Children		"On Schedule" 3rd Graders	
	ModAcK/SE	ModAcK	ModAcK/SE	ModAcK
Overall G.P.A. (total)	2.48	2.52	2.76	2.77
Girls	2.38	2.62	2.69	2.84
Boys	2.59	2.42	2.83	2.70
Subareas				
Math (total)	2.22	2.22	2.58	2.62
Girls	2.16	2.28	2.58	2.62
Boys	2.27	2.17	2.57	2.63
Reading (total)	2.24	2.22	2.64	2.68
Girls	2.05	2.40	2.56	2.76
Boys	2.42	2.03	2.74	2.58
Language (total)	2.43	2.45	2.79	2.83
Girls	2.30	2.57	2.77	2.85
Boys	2.55	2.33	2.81	2.81
Spelling (total)	2.63	2.56	3.05	2.94
Girls	2.43	2.76	2.94	3.05
Boys	2.84	2.35	3.15	2.84
Handwriting (total)	2.48	2.59	2.63	2.80
Girls	2.41	2.66	2.60	2.83
Boys	2.56	2.52	2.66	2.77
Social Studies (total)	2.50	2.51	2.86	2.77
Girls	2.42	2.60	2.78	2.86
Boys	2.59	2.42	2.93	2.70
Science (total)	2.53	2.49	2.79	2.75
Girls	2.45	2.58	2.70	2.84
Boys	2.62	2.41	2.88	2.66
Art (total)	2.74	2.75	2.84	2.79
Girls	2.71	2.78	2.78	2.84
Boys	2.76	2.72	2.89	2.73
Music (total)	2.67	2.78	2.92	2.90
Girls	2.69	2.76	2.90	2.92
Boys	2.66	2.79	2.94	2.87
Health/P.E. (total)	2.87	2.80	3.05	2.90
Girls	2.90	2.77	3.05	2.89
Boys	2.83	2.84	3.04	2.91
Citizenship (total)	2.19	2.43	2.40	2.63
Girls	1.99	2.63	2.24	2.80
Boys	2.39	2.24	2.57	2.46

Table 10
Impact of Kindergarten Model on 'Year 5' Progress Report Scores of K-only Children

	All Children	
	ModAcK/SE	ModAcK
Overall G.P.A. (total)	2.41	2.64
Girls	2.26	2.79
Boys	2.55	2.49
Subareas		
Math (total)	1.97	2.19
Girls	1.87	2.30
Boys	2.08	2.09
Reading (total)	2.36	2.46
Girls	2.13	2.69
Boys	2.59	2.23
Language (total)	2.44	2.50
Girls	2.14	2.80
Boys	2.73	2.21
Spelling (total)	2.44	2.71
Girls	2.17	2.98
Boys	2.71	2.44
Handwriting (total)	2.23	2.72
Girls	2.23	2.72
Boys	2.24	2.71
Social Studies (total)	2.41	2.73
Girls	2.19	2.94
Boys	2.62	2.51
Science (total)	2.18	2.64
Girls	1.91	2.90
Boys	2.45	2.37
Art (total)	2.23	2.84
Girls	2.18	2.89
Boys	2.27	2.79
Music (total)	2.11	2.91
Girls	2.10	2.92
Boys	2.13	2.89
Health/P.E. (total)	2.65	2.87
Girls	2.78	2.74
Boys	2.52	3.00
Citizenship (total)	1.91	2.73
Girls	1.76	2.88
Boys	2.05	2.59

Table 11

Impact of Kindergarten Model on 'Year 6' Progress Report Scores of Children who Attended Pre-K/Head Start

	All Children		"On Schedule" 4th Graders	
	ModAcK/SE	ModAcK	ModAcK/SE	ModAcK
Overall G.P.A.	2.45	2.44	2.85	2.74
Subareas				
Math	2.33	2.17	2.75	2.54
Reading	2.25	2.21	2.64	2.65
Language	2.38	2.21	2.61	2.61
Spelling	2.44	2.41	2.94	2.86
Handwriting	2.32	2.54	2.59	2.85
Social Studies	2.57	2.31	2.91	2.57
Science	2.68	2.42	3.06	2.67
Art	2.78	2.76	2.94	2.99
Music	2.80	2.69	2.97	2.97
Health/P.E.	3.31	2.82	3.58	3.04
Citizenship	2.42	2.42	2.63	3.09

Table 12

Impact of Kindergarten Model on 'Year 6' Progress Report Scores of K-only Children

	All Children		"On Schedule" 4th Graders	
	ModAcK/SE	ModAcK	ModAcK/SE	ModAcK
Overall G.P.A.	2.64	2.64	3.00	2.71
Subareas				
Math	2.46	2.31	2.78	2.47
Reading	2.43	2.49	2.96	2.68
Language	2.49	2.56	2.87	2.68
Spelling	2.41	2.69	2.87	2.85
Handwriting	2.46	2.54	2.78	2.64
Social Studies	2.35	2.49	2.79	2.58
Science	2.55	2.51	3.04	2.59
Art	3.15	3.04	3.48	2.90
Music	2.75	2.88	2.94	2.72
Health/P.E.	3.30	3.15	3.52	3.16
Citizenship	2.06	2.73	2.69	2.76

Table 13

Impact of Pre-K/Head Start Model on Transition from 3rd to 4th Grade: Progress Report Scores of "On Schedule" Children

Model	CI	M	AD
Overall G.P.A.			
3rd grade	2.74	2.90	2.60
4th grade	2.95	2.78	2.35
Subareas			
Math			
3rd grade	2.42	2.60	2.22
4th grade	2.71	2.60	2.00
Reading			
3rd grade	2.52	2.73	2.40
4th grade	2.77	2.57	2.16
Language			
3rd grade	2.62	2.92	2.53
4th grade	2.56	2.62	2.11
Spelling			
3rd grade	2.75	2.89	2.69
4th grade	3.06	2.84	2.36
Handwriting			
3rd grade	2.75	2.84	2.56
4th grade	2.91	2.62	2.53
Social Studies			
3rd grade	2.64	3.00	2.50
4th grade	2.64	2.81	2.17
Science			
3rd grade	2.68	3.03	2.56
4th grade	2.94	2.81	2.36
Art			
3rd grade	3.12	2.93	2.81
4th grade	3.23	2.90	2.71
Music			
3rd grade	3.00	2.93	2.93
4th grade	3.14	3.03	2.82
Health/P.E.			
3rd grade	3.23	3.22	2.88
4th grade	3.50	3.03	2.53
Citizenship			
3rd grade	2.83	3.06	2.50
4th grade	3.13	3.06	2.42

Table 14

Impact of Pre-K/Head Start Model on Progress from 1st Grade to 'Year 6': Progress Report Scores of all Children

	Model	CI	M	AD
Overall G.P.A.				
1st grade		2.68	2.63	2.76
'Year 6'		2.65	2.49	2.25
Subareas				
Math				
1st grade		2.35	2.62	2.60
'Year 6'		2.33	2.28	1.85
Reading				
1st grade		2.21	2.41	2.74
'Year 6'		2.40	2.18	2.00
Language				
1st grade		2.49	2.56	2.68
'Year 6'		2.33	2.22	2.00
Spelling				
1st grade		2.60	2.40	2.81
'Year 6'		2.69	2.32	2.19
Handwriting				
1st grade		2.62	2.58	2.42
'Year 6'		2.60	2.39	2.38
Social Studies				
1st grade		2.81	2.68	2.80
'Year 6'		2.47	2.56	2.05
Science				
1st grade		2.84	2.70	2.82
'Year 6'		2.65	2.68	2.26
Art				
1st grade		2.97	2.65	2.97
'Year 6'		3.00	2.71	2.78
Music				
1st grade		2.86	2.91	2.97
'Year 6'		2.77	2.71	2.74
Health/P.E.				
1st grade		3.17	2.84	2.97
'Year 6'		3.17	2.89	2.50
Citizenship				
1st grade		2.82	2.51	2.29
'Year 6'		2.74	2.65	2.26

Table 15

Impact of Transiency on 'Year 5' Progress Report Scores

	Attended Pre-K/Head Start	Attended K-only
Overall G.P.A.		
no move	2.69	2.71
moved	2.34	2.18
Subareas		
Math		
no move	2.39	2.24
moved	2.01	1.82
Reading		
no move	2.47	2.60
moved	2.03	1.86
Language		
no move	2.70	2.69
moved	2.16	1.86
Spelling		
no move	2.79	2.95
moved	2.32	1.96
Handwriting		
no move	2.73	2.76
moved	2.36	2.00
Social Studies		
no move	2.66	2.79
moved	2.34	2.18
Science		
no move	2.70	2.62
moved	2.32	2.09
Art		
no move	2.76	2.85
moved	2.70	2.53
Music		
no move	2.84	2.85
moved	2.68	2.53
Health/P.E.		
no move	2.88	2.92
moved	2.71	2.71
Citizenship		
no move	2.60	2.69
moved	2.12	2.06

Table 16

Attendance Problems during First Year in School: Impact on 'Year 5' and 'Year 6' Progress Report Scores

	Attended Pre-K/Head Start		Attended K-Only	
	No Problem	Problem	No Problem	Problem
Overall G.P.A.				
'Year 5'	2.50	2.45	2.50	2.56
'Year 6'	2.45	1.92	2.65	2.21
Subareas				
Math				
'Year 5'	2.14	1.99	2.05	1.94
'Year 6'	2.22	1.51	2.42	1.69
Reading				
'Year 5'	2.22	2.12	2.21	2.22
'Year 6'	2.26	1.49	2.37	2.09
Language				
'Year 5'	2.44	2.36	2.37	2.48
'Year 6'	2.25	1.72	2.48	2.16
Spelling				
'Year 5'	2.49	2.56	2.64	2.64
'Year 6'	2.43	1.77	2.59	2.03
Handwriting				
'Year 5'	2.52	2.56	2.53	2.31
'Year 6'	2.56	1.92	2.53	1.81
Social Studies				
'Year 5'	2.48	2.43	2.50	2.81
'Year 6'	2.32	1.84	2.41	2.16
Science				
'Year 5'	2.48	2.54	2.35	3.19
'Year 6'	2.45	2.18	2.56	2.13
Art				
'Year 5'	2.74	2.63	2.70	2.49
'Year 6'	2.67	2.32	3.15	2.60
Music				
'Year 5'	2.74	2.74	2.73	2.48
'Year 6'	2.69	2.44	2.80	2.70
Health/P.E.				
'Year 5'	2.80	2.69	2.83	2.48
'Year 6'	2.78	2.89	3.22	2.82
Citizenship				
'Year 5'	2.42	2.47	2.55	2.48
'Year 6'	2.58	1.15	2.63	1.98

Table 17

Impact of 'Year 5'/'Year 6' Attendance on 'Year 5'/'Year 6' Progress Report Scores: Children who Attended Pre-K/Head Start

# absences:	No Problem < 9 days	Marginal 9-20 days	Problem 20+ days
Overall G.P.A.			
'Year 5'	2.65	2.42	2.16
'Year 6'	2.56	2.28	1.96
Subareas			
Math			
'Year 5'	2.40	1.98	1.60
'Year 6'	2.29	1.98	1.48
Reading			
'Year 5'	2.45	1.97	1.77
'Year 6'	2.35	1.92	1.62
Language			
'Year 5'	2.45	1.97	1.77
'Year 6'	2.39	2.14	1.67
Spelling			
'Year 5'	2.65	2.28	1.72
'Year 6'	2.59	2.31	1.53
Handwriting			
'Year 5'	2.66	2.50	2.14
'Year 6'	2.57	2.26	2.12
Social Studies			
'Year 5'	2.67	2.31	2.12
'Year 6'	2.50	2.17	1.71
Science			
'Year 5'	2.70	2.35	2.03
'Year 6'	2.65	2.20	1.98
Art			
'Year 5'	2.76	2.84	2.64
'Year 6'	2.84	2.66	2.42
Music			
'Year 5'	2.84	2.84	2.49
'Year 6'	2.84	2.67	2.09
Health/P.E.			
'Year 5'	2.84	2.96	2.64
'Year 6'	2.99	2.86	2.54
Citizenship			
'Year 5'	2.53	2.20	2.16
'Year 6'	2.59	2.10	1.95

Table 18

Impact of 'Year 5'/'Year 6' Attendance on 'Year 5'/'Year 6' Progress Report Scores: K-Only Children

# absences:	No Problem < 9 days	Marginal 9-20 days	Problem 20+ days
Overall G.P.A.			
'Year 5'	2.55	2.49	2.39
'Year 6'	2.77	2.39	2.35
Subareas			
Math			
'Year 5'	2.14	1.81	2.27
'Year 6'	2.44	2.26	2.02
Reading			
'Year 5'	2.30	2.18	2.46
'Year 6'	2.48	2.37	2.18
Language			
'Year 5'	2.57	2.20	2.25
'Year 6'	2.64	2.25	2.14
Spelling			
'Year 5'	2.73	2.39	2.42
'Year 6'	2.72	2.30	2.33
Handwriting			
'Year 5'	2.77	2.37	1.85
'Year 6'	2.59	2.34	2.34
Social Studies			
'Year 5'	2.54	2.55	2.47
'Year 6'	2.56	2.25	1.85
Science			
'Year 5'	2.32	2.58	2.40
'Year 6'	2.68	2.39	1.92
Art			
'Year 5'	2.85	2.72	2.52
'Year 6'	3.31	2.72	2.57
Music			
'Year 5'	2.76	2.86	2.52
'Year 6'	2.99	2.52	2.79
Health/P.E.			
'Year 5'	2.74	3.08	2.72
'Year 6'	3.29	3.12	2.87
Citizenship			
'Year 5'	2.55	2.54	2.74
'Year 6'	2.86	1.83	2.47

Table 19

'Year 5' Progress Report Scores: Impact of Parent Involvement During Children's Second Year of School

	Attended Pre-K/Head Start (Kindergarten Involvement)		Attended K-Only (1st Grade Involvement)	
	Low	High	Low	High
Overall G.P.A.	2.37	2.79	2.70	3.24
Subareas				
Math	1.96	2.53	2.34	2.76
Reading	2.02	2.56	2.35	3.12
Language	2.32	2.79	2.43	3.47
Spelling	2.49	2.86	2.92	3.65
Handwriting	2.41	2.60	3.22	2.81
Social Studies	2.44	2.79	2.57	3.43
Science	2.28	2.86	2.51	3.32
Art	2.77	2.93	2.84	2.76
Music	2.60	3.00	2.84	2.76
Health/P.E.	2.72	3.05	3.00	3.00
Citizenship	2.04	2.82	2.62	3.45

Table 20

'Year 5' and 'Year 6' Progress Report Scores of Children who Attended Pre-K/Head Start: Impact of Current Parent Involvement

	'Year 5' Involvement Low	'Year 5' Involvement High	'Year 6' Involvement Low	'Year 6' Involvement High
Overall G.P.A.	2.48	2.66	2.24	2.54
Subareas				
Math	2.29	2.35	1.90	2.28
Reading	2.16	2.43	1.93	2.32
Language	2.35	2.51	1.97	2.51
Spelling	2.54	2.70	2.11	2.62
Handwriting	2.40	2.84	2.21	2.60
Social Studies	2.43	2.77	2.05	2.45
Science	2.42	2.74	2.33	2.47
Art	2.85	2.75	2.74	2.54
Music	2.67	3.00	2.67	2.55
Health/P.E.	2.81	3.06	2.78	2.77
Citizenship	2.24	2.50	2.26	2.51

Table 21

'Year 6' Progress Report Scores: Impact of Parent Involvement During Children's Second Year of School

	Attended Pre-K/Head Start (Kindergarten Involvement)		Attended K-Only (1st Grade Involvement)	
	Low	High	Low	High
Overall G.P.A.	2.18	2.75	2.52	3.21
Subareas				
Math	1.81	2.52	2.24	2.98
Reading	1.89	2.60	2.25	3.37
Language	2.06	2.62	2.54	3.26
Spelling	2.16	2.72	2.37	3.36
Handwriting	2.19	2.72	2.19	2.98
Social Studies	1.95	2.77	2.28	3.04
Science	2.14	2.85	2.37	3.16
Art	2.46	2.98	3.24	3.19
Music	2.54	2.90	2.53	2.61
Health/P.E.	2.62	3.19	3.00	3.60
Citizenship	1.88	2.87	2.61	3.00

Table 22

Third Grade CTBS Scores: Impact of Parent Involvement During Children's Second Year of School

	Attended Pre-K/Head Start (Kindergarten Involvement)		Attended K-Only (1st Grade Involvement)	
	Low	High	Low	High
Total Battery	51.80	60.56	60.06	75.02
Total Reading	46.97	55.95	51.56	69.65
Word Attack Skills	50.70	58.01	50.72	67.32
Vocabulary	47.19	58.13	50.48	71.02
Comprehension	46.03	53.30	51.15	64.43
Total Language	51.32	59.51	56.29	60.70
Spelling	53.74	53.50	51.75	69.21
Language Mechanics	54.95	63.76	59.62	66.42
Language Expression	47.64	54.35	52.57	54.34
Total Mathematics	54.32	62.48	66.95	80.59
Math Computation	54.69	63.27	65.83	70.80
Math Concepts and Application	52.67	58.81	66.41	84.26
Science	49.41	63.08	58.95	77.76
Social Studies	47.99	60.42	59.08	73.34

Note. Scores are expressed in standard score units with M = 50 and SD = 10.

Table 23

'Year 6' and 'Year 7' Vineland Scores: Impact of Parent Involvement During Children's Second Year of School

	Attended Pre-K/Head Start (Kindergarten Involvement)		Attended K-Only (1st Grade Involvement)	
	Low	High	Low	High
Composite Score				
Adaptive Behavior				
'Year 6'	105.82	111.05	-	-
'Year 7'	96.10	103.47	110.63	107.27
Domain Scores				
Communication				
'Year 6'	98.82	104.34	-	-
'Year 7'	90.43	95.91	102.89	100.80
Daily Living Skills				
'Year 6'	111.36	110.05	-	-
'Year 7'	100.79	104.71	113.85	110.58
Social Development				
'Year 6'	103.78	112.89	-	-
'Year 7'	98.31	107.68	109.90	105.49
Maladaptive Behavior				
'Year 6'	9.07	5.22	-	-
'Year 7'	8.75	7.40	6.30	6.06

Note. 'Year 6' data are from 'Class of 2001' and 'Year 7' data are from 'Class of 2000.' For Maladaptive Behavior, a higher score indicates greater maladaptation. For Composite score and all other domains, a higher score indicates greater development.

Table 24

Predictor Variables with Significant Beta Weights for Categorical Variables Predicting the Criterion Variable of Parent Involvement

	Parents Whose Children Attended Pre-K/Head Start & Kindergarten		Parents Whose Children Only Attended Kindergarten	
Category	r	Beta	r	Beta
Preschool Involvement				
Enrolled in Head Start	+.37***	.3666***	<not applicable>	
Multiple Correlation Squared (cumulative)	.367			
R^2 (cumulative)	.134			
Kindergarten Involvement				
High PK/HS Involvement	+.17**	.1676*	<not applicable>	
Child's Age	<not applicable>		-.27***	-.2698**
Multiple Correlation Squared (cumulative)	.168		.269	
R^2 (cumulative)	.028		.073	
1st Grade Involvement				
Two-Parent Family	+.39***	.2983**	<not applicable>	
High K Involvement	+.36***	.2292*	+.37**	.3736**
High PK/HS Involvement	+.28**	.2354*	<not applicable>	
Moving	-.23*	-.2148*	<not applicable>	
Multiple Correlation Squared (cumulative)	.561		.374	
R^2 (cumulative)	.315		.139	
'Year Six' Involvement				
High K Involvement	+.35***	.3218**	<not applicable>	
Two-Parent Family	+.28**	.2357*	-.28**	-.2794*
Multiple Correlation Squared (cumulative)	.425		.279	
R^2 (cumulative)	.180		.078	

* $p < .05$ ** $p < .01$ *** $p < .001$

Table 25

'Year 5' and 'Year 6' Progress Report Scores: Impact of Retention Prior to 3rd Grade

	Attended Pre-K/Head Start		Attended K-Only	
	Not Retained	Retained	Not Retained	Retained
Overall G.P.A.				
'Year 5'	2.60	2.26	2.58	2.44
'Year 6'	2.57	2.10	2.60	2.28
Subareas				
Math				
'Year 5'	2.31	1.81	2.15	1.93
'Year 6'	2.34	1.87	2.38	1.78
Reading				
'Year 5'	2.36	1.87	2.41	2.15
'Year 6'	2.40	1.65	2.42	1.84
Language				
'Year 5'	2.56	1.98	2.51	2.24
'Year 6'	2.39	1.81	2.42	2.06
Spelling				
'Year 5'	2.67	2.17	2.63	2.56
'Year 6'	2.66	1.84	2.57	2.06
Handwriting				
'Year 5'	2.63	2.31	2.59	2.48
'Year 6'	2.60	2.18	2.52	2.11
Social Studies				
'Year 5'	2.58	2.24	2.61	2.53
'Year 6'	2.45	2.08	2.40	2.12
Science				
'Year 5'	2.58	2.29	2.49	2.40
'Year 6'	2.59	2.27	2.40	2.12
Art				
'Year 5'	2.73	2.74	2.82	2.46
'Year 6'	2.82	2.39	3.04	2.87
Music				
'Year 5'	2.82	2.56	2.85	2.46
'Year 6'	2.94	2.19	2.84	3.00
Health/P.E.				
'Year 5'	2.85	2.64	2.83	2.81
'Year 6'	2.99	2.74	3.04	3.13
Citizenship				
'Year 5'	2.44	2.26	2.61	2.27
'Year 6'	2.67	1.65	2.62	2.00

Table 26

Pre-K/Head Start and Kindergarten Progress Report Scores of Children who would be Retained Prior to 3rd Grade

	Attended Pre-K/Head Start		Attended K-Only	
	Not Retained	Retained	Not Retained	Retained
Overall G.P.A.				
Pre-K/Head Start	2.63	2.34	-	-
Kindergarten	2.74	2.29	2.69	2.06
Subareas				
Math/Science				
Pre-K/Head Start	2.47	2.18	-	-
Kindergarten	2.68	2.20	2.62	2.01
Verbal				
Pre-K/Head Start	2.68	2.38	-	-
Kindergarten	2.78	2.36	2.77	2.08
Social				
Pre-K/Head Start	2.74	2.45	-	-
Kindergarten	2.75	2.32	2.65	1.98
Physical				
Pre-K/Head Start	2.67	2.44	-	-
Kindergarten	2.81	2.58	2.78	2.20

Note. Overall G.P.A. and subarea scores could range from 1.00 to 3.00, with the higher score indicative of greater skill mastery. A score of 3 was given to skills that had been mastered, a 2 for skills in which the child was progressing towards mastery, and a 1 for skills the child still needed help with. The verbal subject area is a composite of pre-reading, listening and literature grades, while social includes social skills and work habits.

Table 27

First Grade Progress Report Scores of Children who would be Retained Prior to 3rd Grade

	Attended Pre-K/Head Start		Attended K-Only	
	Not Retained	Retained	Not Retained	Retained
Overall G.P.A.	3.01	1.84	2.97	1.86
Subareas				
Math	3.02	1.23	2.89	.92
Reading	3.07	.96	3.10	1.02
Language	3.00	1.45	3.04	1.52
Spelling	3.15	1.19	3.09	1.20
Handwriting	2.91	1.80	2.85	2.20
Social Studies	3.05	1.92	3.14	1.81
Science	3.11	1.97	3.19	1.92
Art	2.98	2.40	2.84	2.35
Music	3.01	2.43	2.83	2.36
Health/P.E.	3.10	2.53	2.82	2.50
Citizenship	2.79	2.04	2.75	2.02

Table 28

Combined 'Year 6' and 'Year 7' Vineland Scores: Impact of Retention Prior to 3rd Grade

	Attended Pre-K/Head Start		Attended K-Only	
	Not Retained	Retained	Not Retained	Retained
Composite Score				
Adaptive Behavior	103.12	90.18	105.48	97.00
Domain Scores				
Communication	98.22	81.61	98.37	90.08
Daily Living Skills	106.67	95.00	109.86	97.55
Social Development	102.78	97.25	105.98	105.56
Maladaptive Behavior	8.82	8.75	9.72	5.06

Note. For Maladaptive Behavior, a higher score indicates greater maladaptation. For Composite score and all other domains, a higher score indicates greater development.

Table 29

Pre-K/Head Start and Kindergarten Vineland Scores of Children who would be Retained Prior to 3rd Grade

	Attended Pre-K/Head Start		Attended K-Only	
	Not Retained	Retained	Not Retained	Retained
Composite Score				
Adaptive Behavior				
Pre-K/Head Start	102.47	92.93	-	-
Kindergarten	102.50	94.54	101.18	82.00
Domain Scores				
Communication				
Pre-K/Head Start	104.19	90.48	-	-
Kindergarten	106.37	94.90	106.61	85.00
Daily Living Skills				
Pre-K/Head Start	103.04	93.37	-	-
Kindergarten	102.70	96.61	101.96	90.25
Social Development				
Pre-K/Head Start	96.07	92.62	-	-
Kindergarten	94.44	91.07	94.21	81.50
Motor Development				
Pre-K/Head Start	105.33	97.00	-	-
Kindergarten	106.49	102.31	108.42	78.76

Note. For Composite score and all other domains, a higher score indicates greater development.

Table 30

'Year 5' and 'Year 6' Progress Report Scores: Impact of Retention After 3rd Grade

	Attended Pre-K/Head Start		Attended K-Only	
	Not Retained	Retained	Not Retained	Retained
Overall G.P.A.				
'Year 5'	2.75	1.60	2.76	1.49
'Year 6'	2.74	1.90	2.58	2.35
Subareas				
Math				
'Year 5'	2.54	.59	2.48	.32
'Year 6'	2.50	1.58	2.41	2.01
Reading				
'Year 5'	2.63	.37	2.77	.34
'Year 6'	2.61	1.33	2.44	1.58
Language				
'Year 5'	2.75	1.30	2.78	.90
'Year 6'	2.51	1.90	2.34	2.10
Spelling				
'Year 5'	2.92	.83	2.93	1.02
'Year 6'	2.86	1.65	2.54	2.06
Handwriting				
'Year 5'	2.72	1.97	2.74	1.85
'Year 6'	2.74	1.95	2.43	2.57
Social Studies				
'Year 5'	2.76	1.33	2.82	1.25
'Year 6'	2.65	1.53	2.43	1.57
Science				
'Year 5'	2.73	1.59	2.64	1.49
'Year 6'	2.75	1.89	2.40	2.29
Art				
'Year 5'	2.80	2.31	2.94	1.99
'Year 6'	2.95	2.30	2.94	3.51
Music				
'Year 5'	2.90	2.43	2.94	2.37
'Year 6'	3.07	2.30	2.72	3.08
Health/P.E.				
'Year 5'	2.92	2.46	2.87	2.70
'Year 6'	3.17	2.20	3.02	3.02
Citizenship				
'Year 5'	2.56	1.70	2.60	2.52
'Year 6'	2.96	1.49	2.67	2.88

Table 31

Pre-K/Head Start and Kindergarten Progress Report Scores of Children who would be Retained After 3rd Grade

	Attended Pre-K/Head Start		Attended K-Only	
	Not Retained	Retained	Not Retained	Retained
Overall G.P.A.				
Pre-K/Head Start	2.64	2.77	-	-
Kindergarten	2.79	2.60	2.70	2.77
Subareas				
Math/Science				
Pre-K/Head Start	2.48	2.64	-	-
Kindergarten	2.73	2.42	2.64	2.36
Verbal				
Pre-K/Head Start	2.69	2.83	-	-
Kindergarten	2.82	2.63	2.80	2.82
Social				
Pre-K/Head Start	2.75	2.80	-	-
Kindergarten	2.79	2.59	2.66	2.73
Physical				
Pre-K/Head Start	2.67	2.85	-	-
Kindergarten	2.85	2.72	2.76	3.03

Note. Overall G.P.A. and subarea scores could range from 1.00 to 3.00, with the higher score indicative of greater skill mastery. A score of 3 was given to skills that had been mastered, a 2 for skills in which the child was progressing towards mastery, and a 1 for skills the child still needed help with. The verbal subject area is a composite of pre-reading, listening and literature grades, while social includes social skills and work habits.

Table 32

First Grade Progress Report Scores of Children who would be Retained After 3rd Grade

	Attended Pre-K/Head Start		Attended K-Only	
	Not Retained	Retained	Not Retained	Retained
Overall G.P.A.	3.06	2.65	2.30	2.88
Subareas				
Math	3.11	2.35	3.03	2.37
Reading	3.19	2.12	3.26	2.38
Language	3.07	2.43	3.10	2.71
Spelling	3.23	2.57	3.25	2.66
Handwriting	2.95	2.57	2.80	3.06
Social Studies	3.10	2.68	3.20	2.71
Science	3.17	2.68	3.23	2.74
Art	3.03	2.82	2.82	3.26
Music	3.04	2.83	2.85	3.01
Health/P.E.	3.14	2.82	2.79	3.01
Citizenship	2.87	2.64	2.75	3.52

Table 33

Combined 'Year 6' and 'Year 7' Vineland Scores: Impact of Retention After 3rd Grade

	Attended Pre-K/Head Start		Attended K-Only	
	Not Retained	Retained	Not Retained	Retained
Composite Score				
Adaptive Behavior	104.64	96.37	104.97	103.44
Domain Scores				
Communication	100.10	87.38	98.10	91.60
Daily Living Skills	107.71	103.27	108.88	113.70
Social Development	103.56	100.13	106.33	102.49
Maladaptive Behavior	8.32	10.40	10.25	7.72

Note. For Maladaptive Behavior, a higher score indicates greater maladaptation. For Composite score and all other domains, a higher score indicates greater development.

Table 34

Pre-K/Head Start and Kindergarten Vineland Scores of Children who would be Retained After 3rd Grade

	Attended Pre-K/Head Start		Attended K-Only	
	Not Retained	Retained	Not Retained	Retained
Composite Score				
Adaptive Behavior				
Pre-K/Head Start	102.67	103.19	-	-
Kindergarten	103.30	99.05	101.55	92.44
Domain Scores				
Communication				
Pre-K/Head Start	104.44	107.64	-	-
Kindergarten	107.95	98.17	107.61	88.06
Daily Living Skills				
Pre-K/Head Start	103.54	99.99	-	-
Kindergarten	103.73	95.77	103.94	87.11
Social Development				
Pre-K/Head Start	96.43	95.22	-	-
Kindergarten	94.86	94.84	93.61	91.11
Motor Development				
Pre-K/Head Start	104.91	108.17	-	-
Kindergarten	106.00	108.17	107.80	115.36

Note. For Composite score and all other domains, a higher score indicates greater development.

Table 35

First, Third, and Fourth Grade Progress Report Scores of Children who would be Retained After 4th Grade

	1st Grade	3rd Grade	4th Grade
Overall G.P.A.			
not retained	3.06	2.83	2.72
retained	2.13	1.77	1.16
Subareas			
Math			
not retained	3.08	2.56	2.49
retained	2.16	.95	.39
Reading			
not retained	3.13	2.68	2.60
retained	1.66	1.42	.27
Language			
not retained	3.02	2.78	2.54
retained	2.16	1.69	.90
Spelling			
not retained	3.16	2.93	2.83
retained	2.16	1.81	.89
Handwriting			
not retained	2.95	2.76	2.72
retained	1.83	1.91	1.50
Social Studies			
not retained	3.11	2.81	2.65
retained	1.99	1.30	.65
Science			
not retained	3.18	2.81	2.76
retained	1.99	1.56	1.15
Art			
not retained	2.97	2.96	2.92
retained	2.32	2.34	2.03
Music			
not retained	3.05	3.00	2.88
retained	2.32	2.88	2.43
Health/P.E.			
not retained	3.10	3.09	3.06
retained	2.32	2.84	2.24
Citizenship			
not retained	2.84	2.76	2.77
retained	2.14	1.38	1.28

Table 36

Pre-K/Head Start and Kindergarten Progress Report Scores of Children who would be Retained After 4th Grade

	Attended Pre-K/Head Start	
	Not Retained	Retained
Overall G.P.A.		
Pre-K/Head Start	2.64	2.62
Kindergarten	2.74	2.74
Subareas		
Math/Science		
Pre-K/Head Start	2.47	2.44
Kindergarten	2.72	2.68
Verbal		
Pre-K/Head Start	2.69	2.76
Kindergarten	2.79	2.67
Social		
Pre-K/Head Start	2.77	2.59
Kindergarten	2.77	2.86
Physical		
Pre-K/Head Start	2.70	2.67
Kindergarten	2.80	2.71

Note. Overall G.P.A. and subarea scores could range from 1.00 to 3.00, with the higher score indicative of greater skill mastery. A score of 3 was given to skills that had been mastered, a 2 for skills in which the child was progressing towards mastery, and a 1 for skills the child still needed help with. The verbal subject area is a composite of pre-reading, listening and literature grades, while social includes social skills and work habits.

Table 37

Pre-K/Head Start, Kindergarten, and 'Year 7' Vineland Scores of Children who would be Retained After 4th Grade

	Pre-K/Head Start	Kindergarten	'Year 7'
Composite Score			
Adaptive Behavior			
not retained	102.22	101.80	104.94
retained	100.55	116.81	95.30
Domain Scores			
Communication			
not retained	104.61	104.37	99.79
retained	98.86	126.41	93.22
Daily Living Skills			
not retained	103.47	102.08	107.66
retained	106.36	119.06	103.04
Social Development			
not retained	97.67	95.24	105.25
retained	96.01	106.20	94.10
Motor Development			
not retained	102.66	100.14	-
retained	105.17	99.26	-
Maladaptive Behavior			
not retained	-	-	7.56
retained	-	-	12.56

Note. For Maladaptive Behavior, a higher score indicates greater maladaptation. For Composite score and all other domains, a higher score indicates greater development.For Composite score and all other domains, a higher score indicates greater development.

Table 38

Predictor Variables with Significant Beta Weights for Categorical Variables Predicting the Dichotomous Criterion Variable of Retention or Promotion

	Retention Prior to 3rd Grade				Retention After 3rd Grade			
Category	r	R^2	adjusted R^2	Beta	r	R^2	adjusted R^2	Beta
Demographics								
Gender	.26**	.065	.057	.2181*			ns	
SES	.20**	.038	.031	.2208+			ns	
Mobility		ns			.20**	.041	.033	.3013**
Age in 1st grade		ns			-.17*	.033	.025	-.7257**
Age in K		ns			-.06	.046	.039	.3679*
Preschool Model								
Academic PK	-.17**	.029	.022	-.2087*			ns	
Parent Involvement								
In K	-.67**	.450	.389	-.6788+			ns	
In 1st	-.38**	.141	.123	-.4650**				
Grades								
1st Verbal	-.69***	.475	.469	-.6540**			ns	
'Year 5' Verbal		ns			-.67***	.449	.443	-1.009***
Social								
1st grade Vineland Social Dev	-.41***	.166	.153	-.2515+			ns	
Pre-K Citizenship Grades	-.36***	.059	.048	-.2158+			ns	
'Year 5' Citizenship Grades		ns			-.30***	.091	.077	-.2368+
Development								
1st Grade Vineland Self Help	-.50***	.248	.237	-.4933<+>			ns	
Achievement Tests								
CTBS Total Battery	<not applicable>				-.47***	.224	.217	2.449**

<+> $p = .13$ + $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$

Table 39

Parsimonious Model Predicting the Dichotomous Criterion Variable of Retention or Promotion (Girls and Boys Combined)

	Retention Prior to 3rd Grade		Retention After 3rd Grade	
Category	r	Beta	r	Beta
1st Grade Verbal	-.69**	-.6829**	<not applicable>	
Parent Involvement in Kindergarten	-.29*	-.1513 +	<not applicable>	
'Year Five' Verbal	<not applicable>		-.67**	-.7119**
Multiple Correlation Squared (cumulative)	.510		.449	
Adjusted R^2 (cumulative)	.495		.442	

\+ p =.13 * p < .01 ** p < .001

Table 40

Parsimonious Model Predicting the Dichotomous Criterion Variable of Retention or Promotion by Gender

	Retention Prior to 3rd Grade		Retention After 3rd Grade	
Category	r	Beta	r	Beta
Girls				
1st Grade Verbal	-.75***	-.7082***	<not applicable>	
Parent Involvement in Kindergarten	-.35**	-.2447<+>	<not applicable>	
'Year Five' Verbal	<not applicable>		-.56***	-.5114***
Attendance Problem in Pre-K	<not applicable>		.32**	.2184*
Multiple Correlation Squared (cumulative)	.615		.363	
Adjusted R^2 (cumulative)	.578		.342	
Boys				
1st Grade Verbal	-.63***	-.4860+	<not applicable>	
'Year Five' Verbal	<not applicable>		-.75***	-.7301***
Multiple Correlation Squared (cumulative)	.394		.561	
Adjusted R^2 (cumulative)	.365		.549	

<+> p = .08 + p = .06 * p < .05 ** p < .01 *** p < .001

Table 41

Areas of Difficulty for Children who Displayed Some Maladaptive Behavior

	Yes, Usually	Sometimes
Sucks thumb or fingers	10%	10%
Is overly dependent	36%	7%
Withdraws	36%	9%
Wets bed	1%	1%
Exhibits an eating disturbance	4%	1%
Exhibits a sleep disturbance	4%	2%
Bites fingernails	22%	12%
Avoids school or work	34%	10%
Exhibits extreme anxiety	26%	7%
Exhibits tics	7%	3%
Cries or laughs too easily	25%	11%
Has poor eye contact	26%	8%
Exhibits excessive unhappiness	22%	4%
Grinds teeth during day or night	5%	2%
Is too impulsive	29%	13%
Has poor concentration & attention	45%	22%
Is overly active	30%	15%
Has temper tantrums	26%	14%
Is negativistic or defiant	33%	14%
Teases or bullies	22%	15%
Shows lack of consideration	32%	13%
Lies, cheats, or steals	21%	10%
Is too physically aggressive	23%	8%
Swears in inappropriate situations	18%	7%
Runs away	5%	2%
Is stubborn or sullen	37%	17%
Is truant from school or work	10%	7%

Table 42

Pre-K/Head Start and Kindergarten Progress Report Scores for each Future Maladaptive Category

Category:	Attended Pre-K/Head Start OK	Intm	Sig	Attended Kindergarten Only OK	Intm	Sig
Overall G.P.A.						
Pre-K/Head Start	2.48	2.46	2.59	-	-	-
Kindergarten	2.66	2.59	2.48	2.49	2.04	2.68
Subareas						
Math/Science						
Pre-K/Head Start	2.28	2.28	2.43	-	-	-
Kindergarten	2.53	2.66	2.43	2.40	1.92	2.64
Verbal						
Pre-K/Head Start	2.55	2.48	2.64	-	-	-
Kindergarten	2.70	2.63	2.58	2.52	2.18	2.67
Social						
Pre-K/Head Start	2.63	2.56	2.70	-	-	-
Kindergarten	2.68	2.63	2.39	2.48	1.98	2.78
Physical						
Pre-K/Head Start	2.52	2.58	2.55	-	-	-
Kindergarten	2.75	2.66	2.69	2.69	2.24	2.71

Note. Overall G.P.A. and subarea scores could range from 1.00 to 3.00, with the higher score indicative of greater skill mastery. A score of 3 was given to skills that had been mastered, a 2 for skills in which the child was progressing towards mastery, and a 1 for skills the child still needed help with. The verbal subject area is a composite of pre-reading, listening and literature grades, while social includes social skills and work habits.

Table 43

First Grade, 'Year 5,' and 'Year 6' Progress Report Scores for each Future Maladaptive Category

Category:	Attended Pre-K/Head Start OK	Intm	Sig	Attended Kindergarten Only OK	Intm	Sig
Overall G.P.A.						
1st Grade	2.93	2.53	2.14	2.95	2.20	3.03
'Year 5'	2.68	2.44	2.17	2.58	2.62	2.34
'Year 6'	2.59	2.32	2.02	2.60	2.44	2.46
Subareas						
Math						
1st Grade	2.94	2.08	1.65	2.89	1.84	3.00
'Year 5'	2.37	2.20	1.72	1.99	1.78	1.60
'Year 6'	2.37	2.09	1.63	2.23	2.31	2.10
Reading						
1st Grade	2.86	2.11	1.87	2.95	1.88	3.00
'Year 5'	2.46	2.27	1.80	2.07	2.16	1.89
'Year 6'	2.43	2.01	1.74	2.34	2.45	2.09
Language						
1st Grade	2.79	2.52	1.95	3.03	2.14	2.84
'Year 5'	2.55	2.34	2.07	2.35	2.38	2.26
'Year 6'	2.52	2.14	1.74	2.47	2.29	2.11
Spelling						
1st Grade	2.72	2.32	1.87	2.90	2.28	3.32
'Year 5'	2.73	2.34	2.02	2.89	2.78	2.06
'Year 6'	2.63	2.41	1.63	2.66	2.25	2.13
Handwriting						
1st grade	2.81	2.54	1.91	2.96	2.05	2.66
'Year 5'	2.64	2.45	2.22	2.18	3.01	2.54
'Year 6'	2.55	2.36	1.89	2.48	2.12	2.24
Social Studies						
1st Grade	2.89	2.68	2.45	3.30	2.17	3.50
'Year 5'	2.67	2.41	2.20	2.77	2.68	2.55
'Year 6'	2.54	2.05	1.95	2.46	2.46	1.54
Science						
1st Grade	3.00	2.72	2.37	3.12	2.14	3.33
'Year 5'	2.59	2.27	2.30	2.69	2.51	2.39
'Year 6'	2.57	2.28	1.95	2.41	2.44	1.99
Art						
1st Grade	2.85	2.80	2.54	3.02	2.41	2.50
'Year 5'	2.89	2.73	2.31	2.81	2.84	2.81
'Year 6'	2.84	2.80	2.28	2.99	2.73	2.65
Music						
1st Grade	2.84	2.80	2.72	2.75	2.41	2.66
'Year 5'	2.95	2.68	2.35	2.90	2.84	2.81
'Year 6'	2.50	2.85	2.43	3.00	3.01	2.74

Table 43 (continued)

Category:	Attended Pre-K/Head Start OK	Intm	Sig	Attended Kindergarten Only OK	Intm	Sig
Health/P.E.						
1st Grade	2.91	2.80	2.82	2.72	2.44	2.83
'Year 5'	2.95	2.82	2.46	2.89	3.17	2.61
'Year 6'	2.80	2.96	2.50	3.00	2.76	3.11
Citizenship						
1st Grade	3.05	2.33	1.36	3.21	1.69	3.16
'Year 5'	2.73	2.37	1.67	2.86	3.18	1.84
'Year 6'	2.44	2.72	1.13	3.13	2.22	1.54

Table 44

Third Grade CTBS Scores for each Future Maladaptive Category

Category:	Attended Pre-K/Head Start OK	Intm	Sig	Attended Kindergarten Only OK	Intm	Sig
Total Battery	60.57	50.96	46.92	64.23	60.25	41.59
Total Reading	53.26	50.26	44.26	55.94	52.43	38.87
Word Attack Skills	56.44	54.01	52.36	59.78	52.78	45.28
Vocabulary	55.06	48.88	46.77	58.19	57.56	36.24
Comprehension	51.14	50.93	42.84	54.59	48.48	40.00
Total Language	58.54	50.61	44.68	65.26	58.51	41.15
Spelling	55.60	49.46	46.16	51.62	49.37	52.01
Language Mechanics	62.53	52.10	47.51	67.80	48.24	44.22
Language Expression	53.98	47.62	43.14	60.03	62.18	39.62
Total Mathematics	65.06	51.32	51.78	67.83	64.54	39.72
Math Computation	64.84	46.38	53.72	57.88	56.45	47.75
Math Concepts and Application	62.88	52.96	50.46	69.52	67.77	44.63
Science	58.92	57.33	52.13	67.27	43.51	51.99
Social Studies	58.84	52.87	45.12	67.27	43.51	51.99

Note. Scores are expressed in standard score units with M = 50 and SD = 10.

Table 45

Pre-K/Head Start, Kindergarten, Combined 'Year 6'/'Year 7' Vineland Scores for each Future Maladaptive Category

Category:	Attended Pre-K/Head Start OK	Intm	Sig	Attended Kindergarten Only OK	Intm	Sig
Composite Score						
Adaptive Behavior						
Pre-K/Head Start	99.21	96.98	97.58	-	-	-
Kindergarten	102.14	99.14	97.05	96.94	83.78	98.53
'Year 6'/'Year 7'	108.34	97.36	89.28	105.28	97.37	88.90
Domain Scores						
Communication						
Pre-K/Head Start	99.21	98.98	103.14	-	-	-
Kindergarten	101.72	97.78	103.37	92.44	86.00	111.33
'Year 6'/'Year 7'	101.43	91.66	85.26	100.91	89.17	81.82
Daily Living Skills						
Pre-K/Head Start	100.31	99.40	98.00	-	-	-
Kindergarten	103.44	100.85	91.93	96.80	93.18	97.60
'Year 6'/'Year 7'	109.71	101.30	96.84	105.35	103.05	96.77
Social Development						
Pre-K/Head Start	97.34	94.07	91.07	-	-	-
Kindergarten	95.10	94.75	90.04	101.75	74.82	88.74
'Year 6'/'Year 7'	109.26	99.53	90.04	107.97	102.07	92.16
Motor Development						
Pre-K/Head Start	99.62	98.28	100.39	-	-	-
Kindergarten	103.76	119.76	100.16	77.50	107.50	104.50
'Year 6'/'Year 7'	-	-	-	-	-	-

Note. For Composite score and all other domains, a higher score indicates greater development.